# QUANTITATIVE FACTORS FOR INSTRUCTIONAL RESOURCES IN THE STATE UNIVERSITY SYSTEM OF FLORIDA

By

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Abstract of Dissertation Presented to the Graduate Council
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# QUANTITATIVE FACTORS FOR INSTRUCTIONAL RESOURCES IN THE STATE UNIVERSITY SYSTEM OF FLORIDA

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The financial crisis surrounding the allocation of resources to postsecondary education in Florida is described. The significant impact of instructional resources as a major influence on the total financial requirements is pointed out. The extensive research accomplished on this subject on a national basis and the conclusions reached are surveyed and summarized. The detailed system used to allocate instructional resources to the nine state universities in Florida by the education and general budget for the 1974-75 academic year is described in detail. Each of the individual factors used in the allocation model are described and analyzed on a theoretical as well as a practical basis. These factors are discipline category (a prescribed classification of subject matter areas), level of instruction, and productivity factors (student credit hours per full time equivalent faculty member) by discipline category and level of instruction. Budget allocations for instructors for the 1974-75 academic year for the State University System of Florida are compared to the actual utilization of instructors, by university, discipline category, and level of instruction. Productivity factors in the budget allocation model are compared to those experienced in the nine universities in the 1974-75 academic year. It is concluded that there is little relationship between the discipline category productivity factors used in the budget model to those actually experienced in the individual universities. The complexity of the system caused by the use of discipline categories results in material classification discrepancies and an influence on administrative decisions. It is concluded that the factor of discipline category should be removed from the budget allocation model for instructional resources and that the only measure used as a basis of allocation be level of instruction. It is further recommended that due to the evidence that significant classification discrepancies exist in level of instruction that improvement be made in standardizing the levels of similar courses offered from university to university.

# CHAPTER I

# INTRODUCTION

## Objective of the Study

The objective of this study is to examine and critically evaluate the allocation and utilization of instructional resources within the State University System of Florida (SUS):

There are nine separate universities in the system:

| | |
|---|---|
| Florida Atlantic University | Boca Raton |
| Florida A & M University | Tallahassee |
| Florida International University | Miami |
| Florida State University | Tallahassee |
| Florida Technological University | Orlando |
| University of Florida | Gainesville |
| University of North Florida | Jacksonville |
| University of South Florida | Tampa |
| University of West Florida | Pensacola |

The current system of allocation of instructional resources by the Board of Regents staff and the utilization of these instructional resources within the nine state universities will be evaluated from the standpoint of effectiveness and efficiency.

Since the Florida Legislature authorizes a specific number of faculty within the SUS, the staff is faced with the task of determining how these faculty members will be distributed among the nine universities. Currently (1974-75), the method consists of developing productivity factors (credit hours per instructor) for each discipline category (engineering, business and management, education, etc.), for each level of instruction (lower, upper, beginning graduate and advanced graduate), and applying these factors to the projected student credit hours (SCH) by discipline category and level of instruction for each university for the budget year.[1]

Some of the problems inherent in the current system of instructional resource allocation within the SUS are:

1. Historical productivity factors, by discipline, are being used as a basis for determining faculty allocations in the budget year. The presumption is that what occurred in the previous year represents optimum productivity and therefore will provide the most effective distribution of faculty in the budget year. The productivity factors used are simply derived from computation of the immediate past year's faculty utilization.

2. Productivity factors are computed separately for each discipline category. The presumption is that there is

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[1] Florida, _1974-75 Allocation of the Education and General Lump Sum Appropriation, State University System_ (Tallahassee, Florida: n.p., July 18, 1974), pp. 1-2.

something inherently different about the requirements of the instructional environment from discipline to discipline which justifies a different productivity factor per faculty member. Stated another way, the assumption is that the subject matter in one discipline requires a different ratio of students to faculty in order for the instruction to be effective than the subject matter in another discipline. In 1972-73, for the upper level instruction, productivity factors used in the SUS allocation varied from a low of 157.22 student credit hours (SCH) per full time equivalent (FTE) faculty member for health professions to 434.91 SCH per FTE faculty member for computer and information sciences. In 1973-74 the range of upper level productivity factors was from 162.67 for health professions to 450.33 for psychology. (Computer and information sciences dropped to 287.65.) In 1974-75 the range of upper level productivity factors used was from 117.47 for health professions to 424.83 for psychology. (Computer and information sciences rose slightly to 289.22.)[2]

3. Productivity factors are computed on a weighted average of the actual productivity, by discipline, by level

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[2] Florida, Allocation of the Education and General Lump Sum Appropriation, State University System, Academic Years 1971-72, 1972-73, 1973-74, 1974-75 (Tallahassee, Florida: n.p., July 1972, p. 14; August 1973, p. 42; July 1974, p. 13.

of instruction for the previous year, within the SUS. Since instructional productivity is the major programming measure in the SUS budget system for education and general expenditures, it would be used to motivate administrators to be more efficient in the utilization of these resources. The current system tends to provide the universities with the most student credit hours projected into the lower productivity disciplines with more instructional resources.

4. According to Dr. Kenneth Boutwell, the Vice Chancellor for Administration in the State University System during the data-gathering phase of this study, forecasts of student credit hours, by discipline, by level of instruction, by university have been materially inaccurate over the period 1971 through 1974. These are the figures used to determine the mix of productivity factors to be used in making the instructional allocations to each university. This could result in more instructors being allocated to a university simply because the forecast indicated a higher number of student credit hours in low productivity disciplines than actually occurred. The converse would also be true. Dr. Boutwell also stated that forecasts of total student credit hours by level (not broken down by discipline) had been relatively accurate over the same period of time.[3]

---

[3] Kenneth W. Boutwell, Interview in Tallahassee, Florida (August 29, 1972).

The general objective of the study, therefore, was to critically examine the current system of instructional resource allocation in the State University System of Florida for the purpose of suggesting improvements in the effectiveness and efficiency of that system. Several specific areas were examined.

The model used in developing the education and general budget for the 1974-75 academic year was analyzed in detail. Each separate component of the model was described and defined. The assumptions surrounding the use of each component was examined. The relevancy of the particular component and its assumptions to the objective of effective instructional resource allocation were analyzed. The possible behavioral implications of the major components of the model on the individual administrators at the university level were considered.

The budgeted distribution of instructional resources to the nine universities for the 1974-75 academic year was summarized. This was the result of applying the various components of the budget model to the enrollment base used.

The next task was to make a detailed comparison of the allocations made in the budget process to the actual utilization of instructional resources by the nine state universities in academic year 1974-75. Copies of the computer data files used in the information system for the State

University System were provided for this analysis. Two basic files were included: the academic assignment file and the instructional activity file. The first file contains each faculty member's workload assignment for each quarter. The latter file contains the registrars' reports of each course and section offered each quarter and the enrollment in that section. Using these files it was possible to obtain information on four-quarter average assignment of faculty by discipline category and level of instruction as well as four-quarter average enrollment of students in credit hours by discipline category and level of instruction. The actual utilization of instructors and the productivities (student credit hour per full time equivalent faculty member) by discipline category and level of instruction were analyzed from the standpoint of the effectiveness of the model and the objectives attained.

During the study it became evident that the information system being used was subject to some differences in interpretation by the individual universities. The possible causes of these differences and their impact on the results are discussed in detail. Some of these differences have an impact on the conclusions and recommendations of the study.

The results of the detailed analysis of the budget model, the allocation of instructional resources and the actual utilization pattern of those resources during academic year 1974-75, and the impact of the information system used resulted in certain conclusions and recommendations. Those conclusions and recommendations were limited by the institutional arrangements within the State University System of Florida as well as the scope of the study.

## The Scope of the Study

The model used for this study is the State University System of Florida for the academic year 1974-75. While there are references to the subject of higher education and other external factors, the conclusions and recommendations of the study are restricted to the budgeting and operating activities included in the model.

Qualitative differences among the nine state universities were not addressed in this study. The announced policy of the Board of Regents of Florida is that "Comparable resources should be provided for comparable programs in all universities." The document also includes provisions for faculty salary equalization among the universities. This was directed by the Florida Legislature and has been in effect since the 1971-72 budget. The policy includes provisions that the allocation of faculty salary dollars to the universities will provide comparable pay in comparable responsibilties performed by individuals of comparable training, experience, and rank.[4] This policy was established as a result of the differences created when the new state universities were established and average salary scales were programmed at a lower rate than those for the more mature universities. This equalization was phased in so as not to cause a severe hardship at the older universities in any one year.

The conclusion to be reached from the above policies is that the nine state universities are to be treated equally as to the allocation of resources and that each university is therefore expected to meet the same general standards of educational quality.

In the study, instructional resources are discussed in number of allocations rather than dollars. This is the unit that is most comparable when discussing workload and productivity and the differences in discipline mixes and other special program differences.

## Terminology and Classifications

Since there are some technical terms and classifications used in the literature and the budgeting procedures, common understanding of what they are and what is meant by their use is an important consideration.

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[4] Florida, 1974-75 Allocation of the Education and General Lump Sum Appropriation, pp. 1 and 7.

It should be noted here that a major contribution to the terminology and discipline classification structure in higher education has been made by the Western Interstate Commission for Higher Education (WICHE).[5] This professional group has done much to standardize the language used in data programming, data gathering, and research in this important area of our society and has, therefore, improved communication and understanding. One example of this contribution was the definition of discipline categories in the higher education sector. These are

| | |
|---|---|
| 01 | Ag. & Nat. Res. |
| 02 | Arch. & Env. Des. |
| 03 | Area Studies |
| 04 | Biological Sc. |
| 05 | Bus. & Mgt. |
| 06 | Communications |
| 07 | Comp. & Info. Sc. |
| 08 | Education |
| 09 | Engineering |
| 10 | Fine & Apl. Arts |
| 11 | Foreign Lang. |
| 12 | Health Prof. |
| 13 | Home Econ. |
| 14 | Law |
| 15 | Letters |
| 16 | Library Sc. |
| 17 | Mathematics |
| 18 | Military Sc. |
| 19 | Physical Sc. |
| 20 | Psychology |
| 21 | Pub. Aff. & Serv. |
| 22 | Social Sc. |
| 49 | Interdisc. Std. |
| 50-55 | Technology |

Some of the most used technical definitions are

FTE instructor. Full time equivalent instructor. An instructional position using 100 percent of the faculty member's time. Usually expressed in terms of a four-quarter average.

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[5] Western Interstate Commission for Higher Education, *Program Classification Structure* (Boulder, Colorado: n.p., 1970).

FTE student. Full time equivalent student. Since many students are enrolled part time, it is useful to discuss students on an FTE basis. Usually this is defined as fifteen quarter hours for an undergraduate and twelve quarter hours for a graduate student.

Student credit hour (SCH). Measures the credit hours per week of enrollment. This requires special separation from student "contact" hours, which is a measure used in some discussions of instructional workload. While contact hours and credit hours are the same in most cases, some courses with laboratories or other special instruction techniques do not give full credit for all contact hours. In general, credit hours and contact hours are the same when all instruction is conducted in the usual classroom environment.

Lower level. Instruction primarily designed for students with freshman and sophomore classifications. Since instruction at this level is more general or more elementary, it is usually expected that productivity ratios should be higher (larger class sizes).

Upper level. Instruction primarily designed for students with junior and senior classifications. These courses are usually less general and more specifically oriented toward a student's major toward graduation.

Beginning graduate level. Instruction primarily designed for master's degree students.

Advanced graduate level. Instruction primarily designed for doctoral students.

Service course. A course primarily designed for students from disciplines other than the one offering the course. In some cases, for an elementary course, all students from all colleges or from a particular college are required to take the course, sometimes including the majors in the discipline offering the course. An example is English 101 at Florida Technological University.

Major course. A course given primarily for majors in the particular discipline involved.

Productivity. Student credit hours per full time equivalent faculty member. Usually expressed in terms of four-quarter average.

# CHAPTER II

# OUTLINE OF THE PROBLEM

## Financial Crisis

The financial crisis in higher education in the United States has been a subject of concern for several years. It appears to be reaching an even more serious level, at least in Florida. Declining state revenue in 1974 and 1975, and projections that the trend will continue into 1976, have caused restrictions in the allocation of funds to the State University System.

In October 1975 the council of university presidents (the presidents of the nine state universities within the State University System of Florida) recommended a moratorium be placed on additional students next year (1976-77 academic year). The Chancellor of the State University System, E. T. York, in announcing the council's recommendation stated, "If additional funding is not available, 12,000 to 15,000 students cannot be accommodated next fall. We are not playing games. We have very acute problems that relate to the quality of programs." He went on to mention such things as overloaded faculty, massive classes, shortage of chemicals in a chemistry department, and the fact that enrollment in the fall of 1975 was up 8.7 percent while the universities were funded for a 1.3 percent increase over the previous year.[1]

Numerous reports such as this have kept the problem of financing higher education in Florida before the public on a continuing basis during 1975. Parents of high school students in Florida, as well as the students themselves, must be concerned about what the future holds in terms of opportunities for higher education. Faculties are concerned, and university administrators are caught in a dilemma with pressures from all sides.

The Chancellor is the head of the State University Systems Office which operates under the Board of Regents. The Board of Regents is composed of nine members from various parts of the state, appointed by the Governor and approved by the State Senate for staggered terms. The Board was created by statute in 1965 replacing the former Board of Control, and has jurisdiction to govern, regulate, coordinate, and oversee the institutions in the State University System. Their authority for general policy determination also encompasses budget approval, program endorsement, financing of current operations, and financing of physical facilities. During the decade between 1960 and 1970 the number of states with a state-wide board for coordinating higher education increased from eight to forty-three.[2]

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[1] Orlando Sentinel Star (October 15, 1975).

The situation concerning financing of the State University System outlined in the newspaper article above indicates that the new Chancellor, who took office in September, 1975, is taking the position that any enrollment restrictions necessary in the State University System for 1976-77 will be caused by the lack of additional funds from the Legislature. This is further evidenced by Chancellor York's announcement of a memorandum to the nine university presidents on November 26, 1975, which instructed them to plan pay raises for faculty next year even if it means reductions in student enrollments and employee layoffs. Chancellor York was reported to have said that there is a general feeling among legislators that little additional money for the university system will be available next year. In that same memorandum he instructed the university presidents to develop plans for accommodating an expected 2 percent cut in funds already authorized for the current year (1975-76), due to a projected shortfall in ancitipated state revenues.[3]

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[2] United States, State Boards Responsible for Higher Education (Washington, D.C.: Department of Health, Education and Welfare, Office of Education, 1970), pp. 6, 39.

State financial support of higher education in Florida as a percentage of tax revenues, and tax revenues as a percentage of personal income, generally kept pace with the national average in the 1950s and 1960s, according to statistics reported at a 1969 Symposium of the Southern Regional Education Board. Table 1 summarizes these data. Tax effort in the State of Florida as a percent of personal income declined to the national average during the period reported. The fact that tax revenue as a percentage of personal income was less than the average of other southern states may be partially explained by the relative amount of sales tax revenues from tourists, and the large retirement population on low incomes in Florida. As the table indicates, larger percentages of state revenues were allocated to higher education than the national average or the average of the other southern states during that period.

Since academic year 1967-68, three new public universities have begun operations in Florida: a four-year university in Orlando and upper-level universities (beginning at the junior year) at Jacksonville and Miami. All three

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[3] Orlando Sentinel Star (November 27, 1975).

## TABLE 1

State Tax Revenue as a Percent of Personal Income and Operational Expenditures for Higher Education as a Percent of State Tax Revenue, Selected Years

| | Tax Revenue as a Percentage of Personal Income | | | Operational Expenditures for Higher Education as a Percentage of Tax Revenue | | |
|---|---|---|---|---|---|---|
| | 1957-1958 | 1965-1966 | 1967-1968 | 1957-1958 | 1965-1966 | 1967-1968 |
| All States | 4.2% | 4.9% | 5.1% | 7.8% | 11.3% | 13.8% |
| SREB[a] States | 5.2 | 5.7 | 5.7 | 7.6 | 11.2 | 13.4 |
| Florida | 4.9 | 5.4 | 5.1 | 7.8 | 12.5 | 14.6 |

[a] Southern Regional Education Board composed of the states included in the geographic area bounded on the west by Oklahoma and Texas and on the east by Maryland and Florida.

Source: *Proceedings: A Symposium on Financing Higher Education* (Southern Regional Education Board, Miami Beach, Florida, 1969), p. 27.

of these universities have graduate programs at the master's level for some disciplines. Operational support (education and general funds) by the State of Florida for the universities alone (not including junior or community colleges) has increased from $83 million in 1967-68 to $238 million in 1974-75.[4]

The Carnegie Commission on Higher Education in discussing the increase in expenditures for higher education during the 1960s concluded:

> Also, higher education may be reaching a ceiling in the amount of money it can expect from society--it used about one percent of the GNP in 1960 and is using 2.5 percent now, and no other segment of society more than doubled its take of the GNP during that short period of time. A resistance point may have been reached. . . . At a minimum, higher education must get back to its historic (1930-1960) rate of increase in cost per student per year (or cost per student credit hour), of the general rate of inflation plus 2.5 percent: when, for example, the rate of general inflation has been 2.5 percent per year, the rate of increase in cost per unit for higher education has been 5 percent. Elsewhere in the economy productivity has risen about 2.5 percent a year; while in higher education there has been no productivity offset. . . . Thus higher education faces a new situation. . . . Higher education must now be prepared to accept a plus 2.5 percent or even less in the rate of increase in costs per student per year over the rate of general inflation. It must be more provident.[5]

The general areas recommended for attention in attaining this objective of financial restraint were:

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[4] Florida, Comptroller's Report, Statement of Disbursements by Fund and Department (Tallahassee, Florida: n.p., 1967-68, 1974-75), Exhibit E.

[5] Carnegie Commission on Higher Education, The More Effective Use of Resources, An Imperative for Higher Education (New York: McGraw-Hill, 1972), pp. 1-26.

1. Reducing the number of students by accelerating programs and reducing the number of reluctant attenders.
2. Making more effective use of resources in relation to the students in attendance.
3. Achieving budgetary flexibility and improving the budget-making process.[6]

These objectives become important when consideration is given to the estimate made by one economist that higher education in the United States absorbs the energies of more persons in the working-age groups than any other industry (in 1967, 6.6 million FTE persons).[7]

It should be noted that the Carnegie Commission did not recommend restricting enrollments, which is the apparent approach being contemplated in Florida. Of course, one should not overlook the political implications of the position taken by the university presidents and the Chancellor during budget negotiations.

## General Problem of Information Accumulation

A problem in evaluating the effectiveness of the operations of universities is the lack of sufficient information on a comparable basis for assessing the operations or for developing standards. Naturally, educators are opposed to "standards" and to some extent with good reason. However, looking at the situation from the standpoint of an interested outsider gives one a different viewpoint. Forbes magazine published an article in 1974 headlined "Higher Education: Pricing Itself Out of the Market?". They attempted to obtain statistical data but ran into difficulties.

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[6] Ibid.

[7] James Maynard, Some Microeconomics of Higher Education (Lincoln, Nebraska: University of Nebraska Press, 1971), p. 15.

> However good they may be at higher mathematics, the men who administer our senior educational institutions are not especially good at ordinary cost accounting. . . . In keeping with Forbes bottom line orientation, the editors decided to accompany this article with a statistical table comparing among other things the cost of instruction at various colleges and universities. A battery of four researchers went to work on the project. They found that the schools were very interested in what we were doing and mostly willing to cooperate. But when we asked for comparative information on instructional costs, the most frequent reaction was, "Oh, you can't do that!" Finally, Forbes located a computer at Santa Monica, California, that contained most of the information we needed. . . . Even then a good number of schools insisted that the figures weren't meaningful, because no two schools are alike. Maybe, but that's what businessmen used to say when we first started comparing corporate performances through the use of statistics.[8]

The attitude expressed by administrators in the above situation is familiar in the literature. The Executive Director of the National Commission on the Financing of Postsecondary Education (created by Congress in 1972) said

> I find it somewhat ironic that the very universities that defend truth and freedom so fervently are unwilling to allow themselves to be studied or release

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[8] Forbes (September 15, 1974), p. 7.

> information about themselves. . . . Although the truth by itself may not be sufficient to keep anyone free, the full and free flow of truthful information is clearly necessary to any kind of social and political freedom. Conversely, any serious attempt to abridge that freedom must include an effort to prevent or to manage the flow of information. . . . Until recently, higher education has had no need to manage, let alone abridge, information flows, for it has had almost complete freedom to decide. But as higher education has moved into a public enterprise, its decisions do much to make others free or captive. The freedom of higher education needs to be tempered by a concern for the freedom of individuals.[9]

A professor of the Graduate School of Public Policy, University of California at Berkeley, states

> A good deal of what has made great universities really creative has been a function of bad data collection. Much of the best as well as the worst in higher education has flourished in, indeed required, a decent obscurity.
>
> Obscurity allows for diverse practices to develop in different fields and areas--for example, in faculty-student ratios, attrition rates, length of time to degree and the like.
>
> . . . Obscurity allows for the many things, good and ill, that academic men cannot justify. And obscurity itself depends on a certain degree of trust, both by academic men of one another and by their managers externally. But when that trust has eroded, then public officials want to know in much more detail how resources are being used. And modern management systems, which follow upon the erosion of trust, are marked by a passion for good data, and thus are the enemy of obscurity and of all the practices that obscurity has allowed.[10]

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[9] Ben Lawrence, "Report and Comments on the National Commission on New Planning and Managerial Practices in Postsecondary Education," in Forum: Proceedings of the Second National Forum in New Planning and Management Practices in Postsecondary Education (Denver, Colorado: Education Commission of the States, 1974), pp. 147-148.

[10] Martin Trow, "The Public and Private Lives of Higher Education," in Forum: Proceedings, pp. 107-109.

The fact that accurate data on the operations of institutions of higher learning is not universally available in the public domain is understandable when looked at from the standpoint of the administrators and the faculty. There is well-founded apprehension that the information provided may be misinterpreted, or worse that it might be used as basis for controlling future operations. How will the public understand the fact that the average teaching load in a university is less than nine hours a week, particularly when the presidents of the universities have asked for a moratorium on enrollments due to lack of adequate resources? Those individuals working in higher education can understand the apparent contradiction and would justify it on the basis that hours of teaching is not in itself a measure of the workload of faculty members. This lack of understanding by outsiders was evidenced in the Florida Legislature by the passage of a statute in 1971 requiring a minimum teaching load of twelve hours per week in state universities and fifteen hours per week in junior (community) colleges.[11]

## More Effective Use of Resources

Assuming that the nine universities of Florida are going to be faced with the prospect of receiving limited funds from the state over the next few years, what can be done within the system to use those limited funds more effectively? This is not a simple question, since it leads directly to a discussion of the goals of higher education in the State of Florida. The basic document for development and planning of the State University System indicates

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[11] Miami Herald (May 8, 1971); Florida, Florida Statutes Annotated, Vol. 11A § 241.73.

> The goal for higher education in Florida is simple to state, but it is one that requires careful management, enthusiastic support, and extraordinary wisdom to achieve. The goal is a distinguished University System which will provide maximum educational opportunities for the citizens of Florida, without unnecessary duplication or proliferation, through distinguished State Universities that have separately designated responsibilities and which will collectively offer programs in all disciplines and professions at all levels.[12]

Even this statement of the goal is subject to various interpretations, depending on the point of view of the observer. Parents of a high school student are likely to interpret this goal as ensuring the availability of public higher education opportunities to their son or daughter. The members of the Legislature are likely to be more concerned with the costs of achieving that goal, as well as how much of the money will be spent in their districts, and work to the benefit of their constituents. The faculty members within the system are likely to concentrate on the words "distinguished State Universities."

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[12] Florida, Comprehensive Development Plan of the State University System 1969-1980 (Code) Phase I (Tallahassee, Florida: Office of the Florida Board of Regents, December, 1969), p. xiii.

For the purpose of this study, it will be assumed that somewhere in the stated goal is the implication of effective utilization of scarce resources in reaching the objectives aspired to. Since expenditure levels ultimately authorized are determined externally to the State University System after consideration of the amounts requested, a systematic, operationally feasible method of effectively allocating those resources will be required.

Salaries of faculty members represent a major item of expense in higher education. The Carnegie Commission study indicated that, on the average, faculty salaries accounted for about one-third of educational and general expenditures (less organized research), and about two-thirds of expenditures for instruction and departmental research.[13] Based on the amounts budgeted, faculty salaries (not including graduate assistants or adjuncts) compose almost 50 percent of the total educational and general budget within the State University System of Florida. Table 2 provides a comparison of the budgeted amounts over a recent four-year period. As can be observed, the portion of the total budget devoted to faculty salaries decreased approximately 5 percent over the four-year period.

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[13] Carnegie Commission on Higher Education, The More Effective Use of Resources, p. 63.

## TABLE 2

Relation of Faculty Salaries and Other Direct Instruction Costs
to Total Education and General Budget,
State University System of Florida,
Academic Years 1971-72 Through 1974-75 (000s omitted)

| | Total Education and General | Regular Faculty[a] | Regular Faculty as a Percent of Total E & G | Total Instruction[b] | Total Instruction as a Percent of Total E & G |
|---|---|---|---|---|---|
| 1974-75 | $238,175 | $107,853 | 45.3% | $116,712 | 49.0% |
| 1973-74 | 216,996 | 101,033 | 46.6 | 109,400 | 50.4 |
| 1972-73 | 194,109 | 92,976 | 47.9 | 101,027 | 52.0 |
| 1971-72 | 161,373 | 82,515 | 51.1 | 89,236 | 55.3 |

[a] Includes salary and fringe benefits for regular faculty members only.

[b] Includes salaries for graduate and student assistants, adjuncts, fellowships, and faculty development. No operating expenses are included.

Source: Florida, Allocation of Education and General Lump Sum Appropriation, State University System, Academic Years 1971-72 through 1974-75.

Since faculty salaries do make up such a substantial portion of the amount budgeted, and other instructional expenditures are at least partially influenced by the number of faculty members (support personnel, supplies, equipment, library volumes, computer expense, and office space), the utilization of faculty must be an important consideration in the determination of effective resource utilization. As an example of the operating expenses beyond salaries mentioned above, direct departmental expenses alone, not including salaries of support personnel, library, equipment, or any costs of support agencies, were budgeted at $1,524 per faculty member, or a total of $7.66 million for the State University System, for 1974-75.[14] The achievement of a significant increase in the student-faculty ratio, or the productivity in credit hours per faculty member, would be a major method for improving the utilization of limited resources in higher education.[15]

The Carnegie Commission study mentioned above concluded that there are a number of ways in which better utilization of faculty members can still be attained in most institutions and recommended consideration of

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[14] Florida, 1974-75 Allocation of the Education and General Lump Sum Appropriation, p. 58.

[15] Carnegie Commission on Higher Education, The More Effective Use of Resources, p. 63.

> Carefully studying and adopting a varied mixture of class sizes at the different levels of instruction and establishing appropriate average class sizes that different departments may be expected to meet.
>
> Seeking to prevent undue proliferation of courses by periodic review of the totality of course offerings in a department.
>
> Involving the faculty in developing policies directed toward achieving appropriate and equitable teaching loads.
>
> Establishing standards relating to a reasonable maximum amount of time to be spent in consulting activities.
>
> Maintaining reasonable and equitable policies relating to sabbatical leaves for all career members of the faculty, including assistant professors.
>
> Analyzing cost of support personnel, in comparison with other similar institutions, with a view to identifying possible excessive costs in some aspects of support functions, but also making certain that these functions are being conducted efficiently and that highly paid faculty members are not performing functions that could be delegated to lower paid support personnel.[16]

Quoting these recommendations is not intended to imply that these actions have not and are not being considered within the State University System of Florida. The Board of Regents has established policies indirectly aimed at these objectives, such as restricting new programs by requiring their approval for planning, placing low productivity programs on probation for a three-year period, using a four quarter credit hour average basis for computing faculty requirements in 1974-75, and attempting to reduce the total number of credit hours taken toward graduation, particularly graduate programs.[17]

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[16] Ibid, p. 86.

The recommendations of the Carnegie Commission report are common sense approaches that have always absorbed the time and energy of higher education administrators. The point to be made here is that there is no reason to assume that any system or individual university has reached an optimum point in the utilization of resources where no additional students could be accommodated.

For instance, within the State University System of Florida, there are several relatively innocuous policies which in total cause students to spend more time in the university than might otherwise occur. The "forgiveness" policy, which allows students to retake a course and have only the last grade recorded count, and a liberal policy of dropping courses allow students to manage their grade point average.[18] At one university in the system, no Ds or Fs are given; only As, Bs, Cs, or "no credit."[19] If a policy of declaring a moratorium on additional enrollments is to be adopted by the State University System, it would be appropriate to include in the implementing procedures of that policy some consideration of the status of the existing student population, if the limited capacity is to be used effectively. One of the items being discussed by the Board of Regents is a lottery system for admissions. Should a lottery include only the current high school graduates?[20]

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[17] Florida, Change by Design (Tallahassee, Florida: Board of Regents, 1975), pp. 33-36.

[18] Florida, Catalog, Florida Technological University, 1974-1975 (Orlando, Florida: n.p., 1974), p. 63. Note: This is only an example. Florida Technological University's policies on repeating courses and dropping courses are similar to those in the other universities.

There have been some efforts to establish cost relationships in colleges and universities. Russell and Reeves studied the long-run cost curve for higher education in 1935 and posited that per student costs tend to decrease until the school reaches a size of 1,050 FTE students. Above that point per student costs were considered constant.[21] More recently, Maynard studied four-year colleges in thirteen states and found declining per student costs until 5,363 FTE students were enrolled. The student to teacher ratio averaged approximately twenty to one. He cautions against any generalizing about the "typical" college or university.

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[19] Florida, Catalog, Florida International University, 1974-1975 (Miami, Florida: n.p., 1974), pp. 18-19.

[20] Orlando Sentinel Star (November 19, 1975).

[21] John Dale Russell and Floyd W. Reeves, Finance, Volume 7 of Evaluation of Higher Institutions (Chicago, Illinois: University of Chicago Press, 1935), pp. 20-36.

He also observed:

> First it may be safely argued that the majority of educators would likely contend that differences in total costs of two colleges, each with the same number of students and same objective mix of available learning experiences (for example, the same degree programs, distribution of academic disciplines and percentage of faculty holding terminal degrees), and with the two schools being otherwise outwardly homogenous; are attributable to differences in quality. This is because there would be an implicit assumption that the schools with higher costs must be enjoying the use of resources of higher quality. The incentive to accept such an assumption is strong, for to do otherwise leads to a conclusion that (1) there may not be a direct relationship between prices paid for resources and their quality in IHL (Institutions of Higher Learning). Be that as it may, one is unable to uncover the printed work of any reputable observer contending there is a direct, close and positive relationship between costs and quality in IHL.
>
> However, there are varying degrees of difference in the quality of learning at various IHL, even when the programs appear outwardly homogeneous. But to attribute all quality variation to expenditure differences is absurd![22]

He concluded that the function for instruction and departmental costs is the factor most influential on total costs in higher education and that microeconomic theory seems at odds with an industry composed of firms embracing various operational philosophies and not in interfirm competition as such. The strong external influences assumed may not exist when decisions on factor combinations are mostly subject to influences from within. This relative isolation from outside influences could make interinstitutional comparisons somewhat risky. However, if the institutions being analyzed are subject to some strong, homogeneous outside influences, interinstitutional comparisons and analyses may be made with some confidence in the results.

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[22] Maynard, pp. 50-51, 99-107.

The conclusion that interinstitutional comparisons may be made with some confidence in the results if strong homogenous outside influences exist is pertinent to the situation in higher education in Florida. It also might help explain, if not justify, the growing tendency toward centralized state coordinating boards for public higher education throughout the United States mentioned earlier. Apparently, many state legislators were unable (or reluctant) to exert the strong homogenous influence necessary in dealling with requests for funds for individual universities. There is a natural and understandable concern that this centralized authority could result in a reduction in the independence, creativity, and quality of individual universities.

> The appropriate machinery, I believe, will be some form of coordinating agency. I am under no illusion that it will be a panacea . . . .
>
> . . . equilibrium between higher education and state government is difficult to achieve. In fact, when one is confronted with the numerous and inevitable

> problems posed by the planning and coordination of higher education, one is tempted to conclude that the process is by nature incapable of equilibrium. It may be well to recall here Churchill's defense of the democratic process: "It is the worst system of government except any other that has ever been tried." Perhaps it is not too negative to urge that the tensions and disagreements besetting the coordinating process are a lesser evil than either a return to the political jungle, where only the strongest institutions prosper, or a move to direct state administration, which could reduce higher education to mediocrity and uniformity.[23]

The State of Florida has just completed a decade of experience with the concept of a Board of Regents. The document that reports on the history of that period summarizes the current policy within the State University System of Florida relative to three important issues in this current study.

> 1. Funding will be provided to all universities on the same basis for comparable programs. There will be no quality differences based on funding.
>
> 2. Universities have flexibility in their internal operations within the budget restrictions and discipline category limitations imposed.
>
> 3. The management information system will provide for each university to record experience data directly into the system wide computer network on a standardized basis. This reduces requirements for periodic and special reports and provides the State University System Office with timely data for planning and budgeting.[24]

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[23] Robert O. Berdahl, Statewide Coordination of Higher Education (Washington, D.C.: American Council on Education, 1971), pp. 269-270.

[24] Florida, Change by Design, pp. 12, 13, 36, 37.

# CHAPTER III

# THE ALLOCATION MODEL

## Method of Allocation of Instruction Resources for Academic Year 1974-75

The present system of allocating resources within the State University System of Florida was implemented after completion of the Comprehensive Development Plan (CODE) of the State University System of Florida mentioned earlier. That document established the objectives of the system, the individual roles of the several universities, and introduced the planning-programming-budgeting system framework for resource allocations. This 1969 document also forecast the anticipated educational requirements of the State University System through 1980.[1] The 1971-72 academic year budget was developed on a program-budgeting concept with faculty resource requirements computed by level of instruction and discipline category. Three-quarter average enrollment projections and 1970-71 productivity factors were used as a basis for computing requirements.[2]

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[1] Florida, Comprehensive Development Plan, pp. 1-34.

The general formulas used in the 1972-73 budget process were continued with some refinements through the 1973-74 budget. During this period more of the data was accumulated directly, instead of requiring universities to submit special reports on projected enrollments and productivity. By 1974, the information required was completely computerized. Information was recorded by each university on enrollment and faculty utilization each quarter.[3]

## Allocation Procedure

This section will describe the procedure used in allocating faculty to the nine state universities in 1974-75. The basis for this explanation unless otherwise noted is 1974-75 Allocation of the Education and General Lump Sum Appropriation, State University System of Florida, July 18, 1974. Therefore, to reduce repeated citations from that document and the resultant numerous footnotes, pages 1 through 16 of the above document contain the general explanation of the criteria used, and Tables 1 through 19 of the above document contain the specific quantitative data which will be referred to throughout the rest of this chapter.

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[2] Florida, Allocation of the Education and General Lump Sum Appropriation, 1971-72, Tables 1J and 2.

[3] Florida, Change by Design, pp. 42-43.

Discussion of the allocation process will be divided into the following sections to clarify the procedures used:

Subtraction of special allocations

Formula allocation of instructional positions

Formula allocations for research, public service, academic counseling and academic administration positions.

Any changes from the previous year's procedure, or adjustments required by Legislative direction or Board of Regents decisions will be specifically addressed.

The determination of the number of faculty positions available for formula allocation requires the subtraction of several so-called special allocations from the total authorized. These items are the result of legislative direction or Board of Regents decisions to support specific requirements. These are to provide support for programs which would not be adequately funded through formula allocations or to provide a minimum of flexibility and reduce the impact of changing patterns of enrollment within the system. The major items of special allocations were centers of excellence at the University of Florida and Florida State University, basic studies and school of business at Florida A & M University, provisions for possible enrollment growth at Florida International University and the

University of North Florida (new universities without an established enrollment base), adjustments to phase-in over a two-year period the impact of new technique for enrollment calculations (explained later), and a State University System reserve for any unforeseen adjustments that might be required during the budget year. The total impact of all these allocations, adjustments, and reserves was 301 faculty positions or 5.9 percent of the total authorized. Board of Regents policy is to limit special allocations and to gradually eliminate them as their need decreases.

The remainder of the authorized faculty positions were allocated to the nine state universities by formula calculations. Instruction positions were computed by dividing enrollment figures for each university, for each level of instruction for each discipline category, by the weighted average productivity factors per faculty member for each discipline category and level of instruction. For example, assume that a university was projected to have 2,800 student credit hours (SCH) at the lower level in business and management, and the weighted average productivity factor for the State University System for that level for that discipline category was 400 SCH per FTE faculty member. Dividing 2,800 by 400 would authorize seven faculty members to that university for that activity. The actual calculation was more complex than this, but the results were to compute the number of faculty positions for instruction at each level for each university. It was necessary to adjust the productivity factors on a proportional basis so that the total number of spaces allocated would equal the number available from the legislative authorization. This was accomplished by adjusting each productivity factor by the percentage of the difference between the numbers allocated on the first computation and the number available.

The computation of faculty positions to be allocated for research was directly dependent on the number of instructional allocations:

> One research position per twelve undergraduate instructors
>
> One research position per four beginning graduate instructors
>
> One research position per two advanced graduate instructors.

Therefore, the number of research allocations for each university could be computed once the number of instructional positions was known.

The allocation of faculty positions for public service was also based on instructional allocations. One public service position was authorized for each seventy-five instructional positions allocated.

Faculty positions for academic advisement (counseling) were based on enrollment data. A different formula was computed for each university based on the ratio of full-time to part-time students. This recognized the fact that the advisement task was more related to the number of student contacts than the credit hours of enrollment. The urban universities were therefore allocated more advisement positions per FTE student than those universities that tended to have more full time students in their total student population. The range of factors used was one academic advisement position per 259 FTE students at the University of Florida to one academic advisement position per 225 FTE students at Florida International University.

Faculty positions for academic administration were allocated on the basis of cumulative faculty positions for the other four academic functions. One academic administrative position was allocated for each thirteen positions allocated prior to this last calculation.

Table 3 summarizes the allocations made to the nine state universities in the budget for the 1974-75 academic year.

## Allocation Factors

The specific method of allocation outlined above uses two principal factors as determinants of the number of faculty members. These are student enrollment projections and productivity factors. There are also two other important parameters in the calculations, discipline category and level of

TABLE 3

State University System of Florida
Summary of the Allocation of Academic Positions, 1974-75

| University | Instruction | Research, Advisement, Administration | Special Adjustments, and Reserves | Total Allocations | Percentage of Total |
|---|---|---|---|---|---|
| Florida | 962 | 348 | 53 | 1,363 | 26.70% |
| Florida State | 824 | 299 | 35 | 1,158 | 22.69 |
| Florida A & M | 169 | 49 | 38 | 256 | 5.02 |
| South Florida | 645 | 194 | 35 | 874 | 17.12 |
| Florida Atlantic | 214 | 63 | 22 | 299 | 5.86 |
| West Florida | 164 | 50 | 22 | 236 | 4.62 |
| Florida Technological | 247 | 72 | 22 | 324 | 6.68 |
| Florida International | 286 | 87 | 40 | 413 | 8.09 |
| North Florida | 101 | 30 | 32 | 163 | 3.19 |
| SUS Reserve | | | 2 | 2 | 0.03 |
| Total | 3,612 | 1,192 | 301 | 5,105 | 100.00% |
| Percentage of Total | 70.75% | 23.35% | 5.90% | 100.00% | |

Source: Florida, *1974-75 Allocation of the Education and General Lump Sum Appropriation, State University System*, July 18, 1974, Table 16.

instruction. That is to say, student enrollment projections, classified by discipline category and level of instruction, are divided by productivity factors in the same discipline category and level of instruction to determine the number of faculty members required to teach that student enrollment at that level of instruction in that particular discipline.

An evaluation of the method of allocation used in 1974-75 should include discussion of each of these items in view of their separate impact on the allocation process. The mathematical model used in the allocation assumed that each of these was important; therefore, the details of how each was determined, the effect they had on the allocation process, and the usefulness of each for allocating instructional resources will be discussed separately.

## Student Enrollment

The specific enrollment data used in the 1974-75 budget were based on actual enrollment in 1973-74. This was the first time that this particular procedure had been used. Previous years' budgets had been based on enrollment forecasts furnished by the universities, as modified and adjusted by the State University System staff. It can be assumed that the past year's enrollment was considered a more valid and reliable basis for allocating resources for the budget year than forecasts were. It could be argued that historical data from the prior year was a more verifiable and objective basis than university forecasts. If enrollment patterns were not changing rapidly enough to materially alter the results and past enrollment forecasts had been inaccurate, there is some logic to the decision to use historical data.

Two adjustments were made to the 1973-74 enrollment data. The first adjustment had to do with the restrictions placed on the total number of credit hours a graduate student could enroll in for supervised research. This policy was implemented after the Legislature accused the universities of "padding" enrollments for supervised research, and reduced the budget authorization in 1974-75 by 100 faculty positions to compensate for this practice.[4] Since the 1973-74 enrollment figures included some of this so-called "padding," reductions were made to account for this.

Another adjustment had to do with the expected impact of the change in tuition charges to a per credit hour basis in 1974-75. This policy was partially related to the enrollment "padding" situation. In the past full-time students paid a flat fee regardless of the number of hours of credit enrolled in. It was felt that if students were charged by the credit hour they would not enroll in meaningless courses.[5] The 1973-74 enrollment data were adjusted for the estimated impact of this change in method of tuition charges.

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[4] Florida, Change by Design, p. 35.

There was one additional major change to enrollment calculations to be used in allocating resources. Previous budget procedures used a three-quarter average enrollment base and the summer quarter was budgeted separately. Beginning with the 1974-75 budget, four-quarter average enrollment figures were used. This naturally resulted in a smaller enrollment base since the summer quarter enrollment has been historically lower than any of the other quarters.

The use of student enrollment data as a factor in computing the instructional requirements is not questioned in the literature. It is a common basis for allocating instructional resources. The use of the past year's enrollment figures would be questioned since it assumes that the distribution of students (or student credit hours) between universities and by discipline category and level of instruction will not vary. Stated another way, it delays any redistribution of instructional resources between universities until the year after enrollment patterns have changed. This procedure could also have an impact on productivity factors used in the following year's budget cycle

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[5] Ibid.

(to be discussed later). The impact of using past years' enrollment data as a primary variable will be assessed when the actual data tapes for 1974-75 are evaluated.

## Productivity Factor

The determination of instructional allocations was made by dividing the student enrollment figures by the appropriate productivity factor. The term productivity as used within the State University System of Florida means the number of student credit hours per FTE instructor per quarter. The theory behind its use is that if you can predict the number of student credit hours of instruction that is to take place and you know the number of credit hours an instructor can be expected to undertake, the number of instructors required for any predicted student load can be determined. While the theory of using some relationship of projected student enrollment to faculty for this calculation has some support in the literature and in practice, the validity of the particular method used within the State University System of Florida is open to question, if the objective is effective allocation and efficient use of instructional resources.

The first criticism of the current method of using productivity factors is that the factors used are computed on the basis of the past year's experience. The objection to the use of this approach is the same as the argument against using past actual costs rather than standard costs in industrial management systems.[6] Making allocations and comparisons using past actual data assumes that the previous year's performance was efficient or at least represented a desirable standard. Since the weighted average of the past year's productivities are used, there is no attempt to determine what good performance should be over an extended period. Productivity figures used each year since 1971-72 have varied significantly from year to year (see Chapter I for an example). It is possible that actual data could be purposefully manipulated by administrators to produce results desired within certain universities and disciplines. A management control system should motivate administrators to take actions congruent with the overall goals and subgoals of the organization. The use of weighted average productivity factors based on the past year's performance in the nine universities, with the university administrators aware that these factors are being used, may not motivate those decision makers to act in accordance with the overall goals of the State University System. This is assuming that those goals include efficient utilization of instructional resources. If possible the management control system should include provisions for measuring goal congruence.[7]

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[6] Charles T. Horngren, Cost Accounting, A Managerial Emphasis (3rd ed.; Englewood Cliffs, N.J.: Prentice-Hall, 1972), pp. 155, 165-171.

The use of weighted average productivity factors based on the past year's data tends to penalize those who improve productivity by allocating fewer instructors for those disciplines and universities per unit of enrollment the following year, and rewards those whose productivity decreases by allocating more instructors proportionally to those areas the following year. This conclusion assumes that universities actually utilize instructional spaces on a basis similar to that used in the allocation process. Whether this is a valid assumption will be determined by evaluating the 1974-75 data tapes.

The use of past year's weighted average productivity factors becomes even more questionable when an analysis is made of the procedure for assigning workload to individual faculty members. The productivities computed at the end of any year are the result of several factors: the number of faculty members available by discipline category during the year; the actual student workload experienced in that year; the policy used by individual departmental heads, deans, and other administrators to determine the number of courses and sections to be offered each quarter; class size limits; and the workload assigned to each faculty member as an individual. The first two variables by themselves may be enough to challenge the use of historical productivity factors. All other things being equal, productivity will change by the difference between the student enrollment figures used in computing productivity factors and the actual student enrollment figures experienced. This assumes that administrators do not change the mix of courses and sections and the method of assigning workload to faculty members. For example, if a discipline category attracts substantially larger numbers of students in one year than in the previous year because of some external influence (for example, more business and management graduates are being hired and less fine and applied arts graduates), productivity in business and management will increase, assuming a fixed instructor resource, simply because the productivity denominator has remained the same while the numerator increased. Of course, this example assumes that business and management administrators and faculty accept the additional student workload and do not close classes at some arbitrary upper limit which prevented students from enrolling, or elect to hire adjuncts to handle the additional students. Using the same rationale, productivity in disciplines which are attracting less and less students will automatically decrease if all faculty members are assigned to classes using policies of the previous year.

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[7] Ibid., pp. 155, 167, 171.

The last two variables mentioned earlier (the policies being used by administrators for deciding the number of courses and sections, and the determination of individual faculty workloads) have a direct impact on the actual productivity in a given period. What are the bases of these policies and what motivates the individuals who finally make the decisions? Sooner or later instructors are assigned to specific classes and specific limits are placed on class sizes. Therefore, administrators can influence the future year productivity factors by the policies they use in making current decisions on these matters. As an example, if a department head, administrator, or faculty acting as a group decides to increase the number of courses or sections offered and decrease average class sizes accordingly (assuming a fixed number of student credit hours which results in having to use more graduate assistants or adjuncts for teaching) productivity for that discipline will tend to be decreased. The next budget cycle will reward this discipline by authorizing additional faculty members since the lower productivity will be applied to the actual student enrollment figures of the previous year.

The above discussion is based on what is possible under the existing system of allocating instructional resources within the State University System of Florida using productivity factors from the past year's performance.

Table 4 lists the productivity factors actually used in allocating faculty positions to the nine state universities in Florida in academic year 1974-75. The figures themselves illustrate the problems involved in using actual performance as a basis for allocating resources. At the lower level, productivity ranges from 179.88 SCH per FTE faculty member for technology to 611.62 for psychology. The results of applying these productivity factors to student enrollment figures assuming that both disciplines are programmed for 2,000 SCH would be to allocate 11.1 FTE faculty members for technology (2,000 ÷ 179.88) and 3.4 faculty members for psychology (2,000 ÷ 611.62). Or to look at this relationship another way, if the student enrollment workload for technology was 360 SCH and for psychology 1,223 SCH, the allocation to each would be 2 FTE faculty members. If the actual optimum environment, considering both quality of instruction and effective use of resources, dictates this relationship, then the different faculty student ratio may be justified. The question is, however, is the productivity in technology based on optimum environment or simply on what occurred as a result of external

TABLE 4

State University System of Florida
Productivity Factors 1974-75

| | Lower Level | Upper Level | Beginning Graduate Level | Advanced Graduate Level |
|---|---|---|---|---|
| Ag. & Nat. Res. | 377.94 | 285.92 | 230.33 | 0.0 |
| Arch. & Env. Des. | 239.49 | 218.50 | 116.16 | 88.60 |
| Area Studies | 373.15 | 280.12 | 119.42 | 88.60 |
| Biological Sc. | 426.78 | 215.47 | 162.77 | 90.76 |
| Bus. & Mgt. | 406.26 | 331.99 | 254.52 | 113.21 |
| Communications | 342.60 | 335.87 | 213.83 | 139.79 |
| Comp. & Info. Sc. | 440.13 | 289.22 | 264.11 | 88.60 |
| Education | 377.94 | 306.77 | 225.29 | 89.84 |
| Engineering | 292.12 | 197.67 | 158.17 | 110.85 |
| Fine & Apl, Arts | 225.36 | 216.11 | 138.78 | 108.63 |
| Foreign Lang. | 337.88 | 194.57 | 198.52 | 107.71 |
| Health Prof. | 206.73 | 117.47 | 147.69 | 0.0 |
| Home Econ. | 375.05 | 308.53 | 215.47 | 103.69 |
| Law | 0.0 | 0.0 | 374.60 | 0.0 |
| Letters | 380.05 | 308.53 | 215.47 | 56.90 |
| Library Sc. | 430.56 | 343.36 | 244.45 | 122.21 |
| Mathematics | 562.24 | 319.98 | 159.68 | 77.81 |
| Physical Sc. | 398.32 | 234.05 | 122.57 | 76.28 |
| Psychology | 611.62 | 424.83 | 248.34 | 194.44 |
| Pub. Aff. & Serv. | 389.42 | 285.14 | 241.62 | 77.89 |
| Social Sc. | 507.60 | 340.35 | 243.83 | 87.50 |
| Technology | 179.88 | 177.47 | 179.14 | 0.0 |
| TOTALS | 396.01 | 290.74 | 225.57 | 90.23 |

Source: Florida, 1974-75 Allocation of the Education and General Lump Sum Appropriation, State University System, July 18, 1974, Table 13.

circumstances (few students) and/or internal administration (too many different courses or unrealistically low class size limits in technology)?

There may be an indication that these two influences may be involved from analyzing the productivity factors themselves. You will note that at the upper and beginning graduate levels productivity for technology stays approximately the same, while the productivity for psychology is reduced significantly as the level increases. This indicates that the relationship between student and instructor stays the same at all three levels for technology, but that for psychology average class sizes are reduced substantially as the level of instruction increases. The allocation model used to allocate instructional resources assumes that the productivity variations from discipline to discipline and level to level are due to differences in the optimum instructional environment for those disciplines and levels, which dictates different class sizes. The analysis of the actual data tapes for academic year 1974-75 in this study will provide an empirical basis for evaluating the validity of that assumption.

## Discipline Category

The subject of discipline category has been involved in the above discussion of student enrollment and productivity factors because they are both classified by discipline category. At this point in the study specific attention should be given to the requirement for classifying by discipline category. The model used to allocate instructional resources in 1974-75 assumed that there were significant differences in the optimum instructional environment between the specific discipline categories used. Is that assumption valid? Individuals involved in higher education might tend to agree with that assumption on an intuitive basis. Since academicians are discipline oriented themselves, they would like to believe that their discipline is somehow different and this belief could lead to the conclusion that the instructional environment must therefore be different.

The term optimum instructional environment has been used several times in this study. When that phrase is analyzed it essentially means optimum student-teacher ratio. What determines student-teacher ratio? The primary determinant is class size. Therefore the assumption mentioned above is, in effect, there is a valid reason for differences in average class sizes from discipline to discipline. There is no empirical evidence in the literature to directly support or question this assumption. However, there are numerous studies on the effect of class size on the quality of the education received. Most of these studies were conducted using various class sizes, with approximately the same cross section of student ability in each section, sometimes with the same instructor teaching all of the sections studied, sometimes with different instructors. Similar course material and evaluation methods were used to evaluate the instruction in each section. A summary of the research conducted prior to 1950 is included in the Encyclopedia of Educational Research of that year.

> On the basis of criteria used in experimental studies published to date and under typical group teaching procedures, mere size of class has little significance on educational efficiency in the academic subjects.
>
> Although experimental evidence does not provide a clear-cut answer to the class size issue, the general trend of the evidence places the burden of proof squarely on the proponents of small classes.[8]

After analyzing numerous experiments on class size, the Pennsylvania State Division of Academic Research in Services concluded

> Under prevailing methods, class size bears no significant relationship to educational efficiency as measured in terms either of student achievement or any other measurable outcomes. . . .
>
> Most of the advantages of small class sizes accrue to the weaker students. . .
>
> If pupil differentiation is a commendable aim it appears to be more attainable in large classes.[9]

---

[8] American Educational Research Association, Encyclopedia of Educational Research, ed. by Walter S. Monroe (New York: McMillan Company, 1950), p. 215.

[9] Pennsylvania State University, Summary, Abstracts, and Bibliography of the Studies on Class Size (State College, Pennsylvania: n.p., 1958), p. 27.

Experimental programs sponsored by the Fund for the Advancement of Education were conducted at several higher education institutions including the University of Connecticut, Duke University, Fordham University, the University of Kentucky, the University of Nebraska, the University of New Mexico, the University of Oregon, Rensselaer Polytechnic Institute, and the State College of Washington. Some of the conclusions of individual experiments were

> When the same instructor taught sections of different size there were negligible differences in student performance . . . the best students did equally well under either method of handling the class groups, average students performed better in large classes taught by the best professors . . . the expected similarity of results between the large experimental and small control sections was demonstrated.[10]

In another experiment, the conclusions were

> For the teachers involved, teaching the courses they taught, using the teaching methods employed; large class sized from 85 to 140 can be taught as effectively as small classes of 16 to 20.[11]

Included in the disciplines taught in the above experiments were economics, sociology, political science, engineering and mathematics. None of the studies indicated any requirement for different class sizes because of the disciplines being taught although there were differences in the method of instruction used from discipline to discipline.

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[10] Fund for the Advancement of Education, Better Utilization of College Teaching Resources (New York: n.p., 1959), pp. 36-42.

[11] Wallace B. Nelson, "An Experiment in Class Sizes in the Teaching of Elementary Economics," The Educational Record, 40 (October 1959), 330-341.

Another consideration which supports a questioning attitude on the requirement for differences in class sizes between disciplines is actual practice in secondary education (high schools). The standards of the Southern Association of Colleges and Schools do not include class size criteria by discipline.[12]

Another factor to be considered in discussing differences in discipline categories is whether the current classification system adequately defines discipline. There might be agreement that biological sciences, mathematics, foreign language and psychology are disciplines; but how do business and management, fine and applied arts, engineering, letters, health professions, and education fit into the same classification system. What is assumed in the above classification system is that while the first four listed are considered separate disciplines, such areas as finance, music, electrical engineering, nursing, and primary education are not significantly different enough to separate them from the other subject areas included in the board classifications. While the twenty-four discipline categories used in the allocation model and reporting system could be challenged in more detail, the question to be answered is whether there are significant differences in instructional environment (class size) requirements between the set of discipline classifications selected to justify variable criteria for productivity for this set of twenty-four.

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[12] Southern Association of Colleges and Universities, Principles and Standards of Membership, 1975 Edition (Atlanta, Georgia: n.p., 1975), pp. 5, 6.

## Level of Instruction

The classification of the factors of student enrollment and productivity by level of instruction is also subject to some question. The assumption of the use of this classification criteria is that there are significant variations in the optimum instructional environment between levels of instruction which justify variances in student-teacher ratios. In practice it is evident that average class size tends to decrease as level of instruction increases. But why does this occur? Intuitively, one might conclude that it is because there are fewer students seeking courses at the higher levels. This conclusion might apply from the upper level to beginning and advanced graduate levels, but not from the lower level to the upper level, at least within the State University System of Florida. The figures used for student enrollment, system wide, for 1974-75 in full-time equivalent (FTE) students was 18,186 lower level, 42,273 upper level, 7,817 beginning graduate level, and 2,430 advanced graduate level. These data plus the information from Table 5 indicate that while there are 2.3 times as many students at the upper level, average productivity for all disciplines is 36 percent higher at the lower level. Therefore, at least between the upper and lower levels there must be some explanation other than numbers of available students for the difference in productivity.

Another intuitive possibility is that the difficulty of the subject matter is the cause of the general decrease in average class size as level of instruction increases. Stated another way, the complexity of the concepts involved and the environmental requirements for demonstrating and teaching those concepts makes a lower teacher-student ratio necessary. None of the experiments noted in the literature report on the impact of the level of instruction on class size. Most reports on experiments do not mention the level of instruction taking place in the experiments.

There is general recognition in the literature and in the administration of higher education that level of instruction is a factor in class sizes. The Carnegie Commission reports that the median student-teacher ratio at doctoral granting universities for all levels of instruction is approximately 16 percent lower than that at universities offering graduate programs at the master's level only.[13]

As a general rule, state systems of higher education with strong centralized control of resource allocation recognize that graduate programs will require more in terms of faculty resources per student than undergraduate programs will.[14] Some states with centralized control, including Florida, use a different student-faculty ratio for lower level, upper level, and graduate level.[15] Since the allocation of instructional resources in the State University System of Florida since 1971 has recognized four separate levels of instruction, it is expected that the analysis of the data tapes will disclose that actual productivity does decrease as the level of instruction increases. However, an evaluation will be made of the change in productivity by level, from discipline to discipline, to insure that the overall weighted average productivities are not overlooking the possibility that some universities have found a method of reducing the influence of level of instruction on productivity.

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[13] Carnegie Commission on Higher Education, The More Effective Use of Resources, p. 158.

[14] Berdahl, pp. 158-172.

[15] Charlie Coffman, "How PPBS Works on a Large Scale," College and University Business, 55 (November 1973), 40-41.

Table 5 shows how the instructional spaces allocated to universities (column 1 of Table 3) were broken down by discipline category and level of instruction, using the productivity factors in Table 4 and the adjusted enrollment figures of academic year 1973-74. This table indicates the influence of discipline category and level of instruction on the allocation process. Universities which had large enrollments in 1973-74 in the disciplines with lower than average productivity received a larger share of faculty allocations than universities which had large enrollments in the disciplines with higher than average productivity.

Note that education, whose graduates are having more and more difficulty in obtaining employment in that field, earned 19.90 percent of the total instructional faculty. The next largest share was business and management with 12.37 percent. Another significant figure is that 60.46 percent of the instructional faculty was allocated at the upper level. This could provide an area for concentrating efforts to improve productivity ratios during periods when enrollments increase without commensurate increases in faculty.

Table 5 only addresses the positions allocated by the formula for instruction. This is, of course, the largest percentage of the faculty allocations. Allocations for

TABLE 5

State University System of Florida 1974-75, Instruction Budget, Formula Allocated, Full Time Equivalent Faculty Positions, by Discipline, and Level of Instruction

| Discipline | Lower Level | Upper Level | Beginning Graduate Level | Advanced Graduate Level | Total | Percent of all Disciplines |
|---|---|---|---|---|---|---|
| Ag. & Nat. Res. | .39 | 1.37 | .30 | | 2.06 | .06% |
| Arch. & Env. Des. | 9.47 | 34.03 | 5.71 | .09 | 49.30 | 1.36 |
| Area Studies | .16 | 5.45 | .96 | .39 | 6.96 | .19 |
| Biological Sc. | 51.34 | 88.91 | 14.34 | 19.11 | 173.70 | 4.81 |
| Bus. & Mgt. | 49.58 | 344.63 | 38.69 | 13.91 | 446.81 | 12.37 |
| Communications | 11.63 | 57.69 | 4.71 | 1.50 | 75.53 | 2.09 |
| Comp. & Info. Sc. | 1.43 | 21.39 | 1.21 | .22 | 24.25 | .67 |
| Education | 36.05 | 461.85 | 130.23 | 90.89 | 719.02 | 19.90 |
| Engineering | 9.37 | 120.32 | 24.36 | 26.60 | 180.65 | 5.00 |
| Fine & Apl. Arts | 68.24 | 158.40 | 19.89 | 6.42 | 252.95 | 7.00 |
| Foreign Lang. | 59.98 | 35.99 | 4.83 | 6.16 | 106.96 | 2.96 |
| Health Prof. | 3.05 | 88.55 | .36 | | 91.96 | 2.55 |
| Home Econ. | 5.23 | 24.52 | 2.38 | 2.38 | 34.66 | .96 |
| Law | | | 45.43 | | 45.43 | 1.26 |
| Letters | 128.00 | 158.69 | 16.35 | 37.21 | 340.25 | 9.42 |
| Library Sc. | .95 | 4.36 | 8.09 | .91 | 14.31 | .40 |
| Mathematics | 42.75 | 97.79 | 14.13 | 19.06 | 173.73 | 4.81 |
| Physical Sc. | 92.67 | 97.17 | 27.32 | 54.67 | 271.83 | 7.53 |
| Psychology | 13.14 | 83.36 | 13.90 | 10.71 | 121.11 | 3.35 |
| Pub. Aff. & Serv. | .59 | 46.01 | 9.20 | 1.25 | 57.05 | 1.58 |
| Social Sc. | 97.40 | 240.22 | 33.67 | 31.55 | 402.84 | 11.15 |
| Technology | 7.43 | 13.17 | .30 | | 20.90 | .58 |
| TOTAL | 688.85 | 2183.87 | 416.36 | 323.18 | 3612.26 | 100.00% |
| Percent of all levels | 19.07% | 60.46% | 11.52% | 8.95% | 100.00% | |

Source: Florida, 1974-75 Allocation of the Education and General Lump Sum Appropriation, State University System, July 18, 1974, Tables 1-16.

faculty research spaces are based directly on the instructional spaces earned, as mentioned in the first section of this chapter. Therefore, in considering the total number of faculty members authorized for teaching and research, the percentage distributed to lower and upper levels is reduced. If research positions are added to instruction positions the percentage distribution would be

Lower level (one research per twelve instruction), 18.13 percent

Upper level (one research per twelve instruction), 57.46 percent

Beginning graduate level (one research per four instruction), 12.64 percent

Advanced graduate level (one research per four instruction), 11.77 percent.

The result of using this variable ratio for computing research positions by level of instruction is to increase the emphasis on graduate programs and increase their costs. Those professors who teach graduate programs not only teach smaller classes (lower productivity), but their teaching loads in credit hours is smaller. The average professor teaching advanced graduate courses could have a teaching load of six credit hours a week. The average professor teaching beginning graduate courses could have a teaching load of nine credit hours per week.

# CHAPTER IV

# UTILIZATION OF INSTRUCTIONAL RESOURCES, ACADEMIC YEAR 1974-75

## The Allocation Model and Budget Policy

The previous chapter outlined the basis of allocation and the number of instructional resources authorized each of the nine state universities by the allocation process used in the 1974-75 budget. The model used was designed to equitably distribute resources to universities for comparable programs by discipline category and level of instruction. The underlying assumption of the allocation model is that equal quality instruction is possible at all of the universities if resource allocations are made on the basis of the immediate past year's enrollment at the individual universities multiplied by system-wide productivity factors based on weighted averages by discipline category and level of instruction. A logical conclusion from the allocation model would be that there should be some correlation between the actual utilization of instructional resources by discipline category and level of instruction, and the basis on which they were allocated by discipline category and level of instruction. If the decision makers at the State University System (SUS) office concluded that quality education at each university was best attained by the allocation model used, then a test of the validity of this conclusion is to compare the actual utilization of instructional resources in the budget year against the basis of distribution of resources in the budget for that year.

There is no direct policy in the SUS budgetary and control procedures which requires universities to utilize instructional resources in the discipline categories and levels of instruction for which the instructional spaces were authorized. The lack of a policy on this subject may be questioned on the grounds that the model used to determine allocations is very complex. If such a complex model is necessary to effectively allocate resources, shouldn't the SUS expect the resources be used in some direct relationship to the basis of allocation? This is not to say that the utilization should be exactly as authorized. There are some inflexibilities in the institutional arrangements. Tenured faculty cannot be easily discharged, even in disciplines where the requirement for faculty is significantly decreasing. There are very likely to be difficulties in reallocation of faculty positions from declining workload disciplines to expanding workload disciplines. However, it might be logical to restrict the hiring of new faculty within the SUS in those disciplines with a known surplus of existing faculty.

The Board of Regents does have a policy which requires approval of any new undergraduate or graduate degree program prior to planning or implementation. This policy has reduced the duplication of some programs and the proliferation of some programs when the requirement was questionable. In 1974, four new doctoral programs were requested by the universities and none were approved, nineteen new master's programs requested with ten approved, and nine new bachelor's programs requested with four approved.

The Board of Regents also has a policy which places degree programs on probation for three years if production of degrees or input of students is below certain tolerances. The exact criteria used has not been publicly announced. During 1973, 1974, and 1975 a total of 161 degree programs were placed on probation. Eleven of those programs were voluntarily terminated by universities. Some programs were consolidated by the universities, but there is not reported case where a university was directed to terminate a program by the SUS office. The probation causes attention to be focused on the program and frequently results in the university taking action to improve the productivity, consolidate, or voluntarily terminate the program.[1]

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[1] Florida, Change by Design, pp. 12, 13, 32. 33.

## The Data Base

The State University System office provided the actual data tapes for academic year 1974-75 for academic assignments and student enrollment. The tapes included the assignment of each individual instructor in percentage of total time, classified by discipline category and level of instruction. They also included the instructor assignment and student enrollment for each section of each course offered during the year, based on registration records.

The information on academic assignment will be used as a basis of comparison with the allocations made in the budget to measure variances by university, discipline category, and level of instruction. The enrollment figures will be used later to analyze and compare budgeted productivity factors with actual productivity factors by university, by discipline category, and level of instruction. As stated in Chapter III, a four-quarter average enrollment and productivity were used in the allocation process. This means that data for the four quarters beginning in June, 1973, and ending in June, 1974, were the basis of allocation. Due to the fact that the computerized reporting system used for the three quarters of the 1973-74 academic year had some reporting and classification problems, the format and procedures used were materially changed beginning in the fall quarter (September) 1974. The result of this change is that the summer quarter, 1974, data were not available when this study started.

There were a few other quarters of academic year 1974 information not available in the computer system for some universities at the time it was decided to begin the analysis. A decision was made to complete the analysis with the data available. Table 6 summarizes the files not recorded as of September 15, 1975, and April 7, 1976. It should be noted that these data were to have been recorded in the computer prior to the end of each quarter. In academic year 1974 faculty activity reports were made up after the drop-add period. Student enrollment data are also as of that same time. Except for the summer quarter data which were incompatible with the fall and subsequent quarters because of format changes, all of the missing files were from the more mature universities. For instructional assignments the one file missing for the fall quarter, 1974, from Florida State University was almost one full year late by September 15, 1975. An additional set of data was made available by the SUS office as of April 7, 1976. Some of the quarters are still missing as indicated by XO in Table 6.

Several discussions were held with personnel from the State University System's office concerning the missing files. No explanation was provided either by individuals

## TABLE 6

State University System of Florida
Academic Year 1974-75 Data Unavailable as of September 15, 1975,
and Data Still Unavailable as of April 7, 1976

| | Summer | Fall | Winter | Spring |
|---|---|---|---|---|
| Academic Assignment File | | | | |
| Florida | XO | | | |
| Florida State | XO | X | | |
| Florida A & M | X | | | |
| South Florida | X | | | |
| Florida Atlantic | X | | | |
| West Florida | X | | | |
| Florida Technological | X | | | |
| Florida International | X | | | |
| North Florida | X | | | |
| Instructional Activity File | | | | |
| Florida | X | | X | |
| Florida State | XO | | X | |
| Florida A & M | XO | | | X |
| South Florida | X | | | X |
| Florida Atlantic | XO | | X | |
| West Florida | XO | | X | |
| Florida Technological | X | | | |
| Florida International | X | | | |
| North Florida | X | | | |

Source: Experience in obtaining computer data tapes from State University Systems Office, Tallahassee, Florida.

Note: An "X" indicates the data were not available in the proper format in the State University System Computerized Information System, on September 15, 1975. An "XO" indicates that this same data were unavailable on April 7, 1976.

from Management Information Systems or the Planning and Analysis Division. It was disclosed that factors had been developed for approximating the missing information based on previous years' relationships. This technique was used in this study for the data indicated as XO in Table 6. Therefore, when the term "actual utilization" is used in the balance of this study, it should be understood that it was necessary to approximate a minor portion of the faculty assignment data (summer, 1974, UF and FSU) for summer quarter, 1974. The summer quarter accounted for only 12.5 percent of the total year's enrollment in academic year 1973.[2]

The use of factors for approximating a few quarters of data is not considered material as far as any conclusions are concerned. The SUS office used the identical technique for preparing the budget for 1975-76. They are mentioned here to insure complete understanding. Actual data figures used in this study for the 1974-75 academic year are the averages of the data reported for that year for most universities. After discussing this difference with individuals in the SUS office responsible for the data accumulation system, and analysis, it was decided that the comparisons made would be valid since it is only the significant variances between budgeted and actual data that will be used for any conclusions. Both sets of figures are four-quarter averages, therefore, the influence of any one quarter's figures on the results is minimal.

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[2] Florida, 1974-75 Allocation of the Education and General Lump Sum Appropriation, Table 11.

## Comparisons of Allocated Versus Actual Instructional Resources

When the data from the computer tapes were being analyzed, it became apparent that the formula allocation of instructional spaces shown in Table 5 in the previous chapter would not be adequate for comparison with the actual reports of faculty activity. Although Table 5 is accurate as far as formula allocations for instruction is concerned, using enrollment and productivity figures from previous year, it does not include the special allocations made to universities after the formulas were applied. Referring back to Table 3 it will be noted that 301 faculty spaces were allocated to specials, adjustments, and reserves. It may also be observed that 299 of these spaces (301 minus 2 SUS reserve) were allocated to individual universities. Therefore, before a comparison was made with actual allocations of instructional spaces the 299 spaces were distributed within each university by discipline category and level of instruction on the same basis as the formula allocations. The original formula allocations of 3,612 spaces, plus the 299 special allocations to individual universities are shown as a basis for comparison with the actual utilization figures from the computer tapes provided by the SUS office. Tables 7, 8, and 9 show the adjusted figures in the budget column.

Details of all of the comparisons actually made will not be completely displayed in tables since this would require tables by discipline category for each level of instruction for each of nine universities. Overall comparisons will be made and then the significant variations noted will be discussed by university, discipline category, and level of instruction. For comparison purposes working papers were developed showing budgeted versus actual data by the SUS as a whole, classified by level of instruction and discipline category and also by individual university. Two columns were shown for each, a budget column and an actual column. The budget column data were taken from the budget document itself.[3] The actual column data were taken directly from the computer tapes provided by the SUS office except for those quarters missing in summer 1974. These tapes contained the actual standardized reports of faculty activity for each university for each quarter during the 1974-75 academic year.[4] It is emphasized that these were the actual reports from the universities and not the result

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[3] Florida, 1974-75 Allocation of the Education and General Lump Sum Appropriation, pp. 1-16 and tables 1-19.

[4] Florida, Computer Data Files of Instructional Activity and Academic Assignments, State University System, Academic Year 1974-75 (provided by Information Services Office, Tallahassee, Florida, 1975).

TABLE 7

State University System of Florida
Budgeted Full Time Equivalent Faculty Compared to Actual Utilization Faculty
Undergraduate Levels, Academic Year 1974-75

| | LOWER LEVEL | | | UPPER LEVEL | | |
|---|---|---|---|---|---|---|
| | Budgeted FTE | Actual FTE | Actual as a Percent of Budgeted | Budgeted FTE | Actual FTE | Actual as a Percent of Budgeted |
| Ag. & Nat. Res. | .39 | 1.71 | 438% | 1.37 | 3.36 | 245% |
| Arch. & Env. Des. | 9.63 | 9.33 | 97 | 35.43 | 32.16 | 91 |
| Area Studies | .16 | .20 | 125 | 5.45 | 2.93 | 54 |
| Biological Sc. | 54.12 | 35.22 | 66 | 94.20 | 67.16 | 71 |
| Bus. & Mgt. | 58.29 | 35.16 | 60 | 380.47 | 259.84 | 68 |
| Communications | 12.14 | 6.66 | 55 | 59.47 | 51.32 | 86 |
| Comp. & Info. Sc. | 1.43 | .23 | 16 | 21.80 | 14.10 | 65 |
| Education | 38.02 | 41.68 | 110 | 530.67 | 352.08 | 66 |
| Engineering | 9.75 | 15.97 | 164 | 127.59 | 101.62 | 80 |
| Fine & Apl. Arts | 72.16 | 59.54 | 83 | 169.40 | 146.01 | 86 |
| Foreign Lang. | 63.41 | 55.66 | 88 | 36.74 | 41.65 | 113 |
| Health Prof. | 3.14 | 2.69 | 86 | 99.24 | 52.38 | 53 |
| Home Econ. | 5.28 | 5.22 | 99 | 24.70 | 22.85 | 89 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Law | | | | | 1.26 | 0 |
| Letters | 134.96 | 109.84 | 81 | 170.59 | 132.28 | 78 |
| Library Sc. | .97 | .09 | 09 | 4.36 | 3.46 | 79 |
| Mathematics | 45.20 | 45.95 | 101 | 104.10 | 101.27 | 97 |
| Physical Sc. | 97.90 | 86.44 | 88 | 102.40 | 94.23 | 92 |
| Psychology | 13.90 | 7.75 | 56 | 87.91 | 60.91 | 69 |
| Pub. Aff. & Serv. | .59 | .11 | 19 | 47.37 | 27.69 | 58 |
| Social Sc. | 104.00 | 82.18 | 79 | 262.69 | 206.25 | 79 |
| Technology | 7.59 | | 0 | 14.54 | 17.04 | 117 |
| Interdisc. Studies | | 24.98 | 0 | | 4.10 | 0 |
| Subtotal | 733.04 | 627.21 | 86% | 2380.58 | 1795.95 | 75% |
| Miscellaneous Classification | | 14.06 | | | 22.42 | |
| Total | 733.04 | 641.27 | 87% | 2380.58 | 1818.27 | 76% |
| Percent of all Levels | 18.85% | 19.08% | | 61.23% | 54.16% | |

Sources: Budget - Florida, 1974-75 Allocation of the Education and General Lump Sum Appropriation, State University System, July 18, 1974, Tables 1-16.

Actual - Florida, Computer Data Files of Instructional Activity and Academic Assignment, Academic Year 1974-75 (provided by Information Services Office, Tallahassee, Florida, 1975).

## TABLE 8

### State University System of Florida
### Budgeted Full Time Equivalent Faculty Compared to Actual Utilization Faculty, Graduate Levels, Academic Year 1974-75

| | LOWER LEVEL | | | UPPER LEVEL | | |
|---|---|---|---|---|---|---|
| | Budgeted FTE | Actual FTE | Actual as a Percent of Budgeted | Budgeted FTE | Actual FTE | Actual as a Percent of Budgeted |
| Ag. & Nat. Res. | .38 | .20 | 53% | | | |
| Arch. & Env. Des. | 5.98 | 11.79 | 197 | .09 | .21 | 233% |
| Area Studies | .96 | .79 | 82 | .41 | .62 | 151 |
| Biological Sc. | 14.79 | 27.00 | 183 | 19.76 | 13.19 | 67 |
| Bus. & Mgt. | 42.24 | 66.49 | 157 | 14.40 | 9.41 | 65 |
| Communications | 4.71 | 6.58 | 140 | 1.52 | 2.14 | 141 |
| Comp. & Info. Sc. | 1.21 | 2.36 | 195 | .22 | | |
| Education | 141.56 | 207.42 | 147 | 93.50 | 57.88 | 62 |
| Engineering | 25.80 | 41.98 | 163 | 27.78 | 20.74 | 75 |
| Fine & Apl. Arts | 20.70 | 26.58 | 131 | 6.51 | 5.97 | 92 |
| Foreign Lang. | 4.83 | 12.17 | 252 | 6.34 | 6.12 | 97 |
| Health Prof. | .36 | 6.90 | 1917 | | .69 | 0 |
| Home Econ. | 2.40 | 5.96 | 248 | 2.57 | 2.82 | 110 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Law | 47.12 | 40.15 | 85 | | 4.12 | 0 |
| Letters | 17.06 | 31.62 | 185 | 38.43 | 14.62 | 38 |
| Library Sc. | 8.24 | 6.62 | 80 | .91 | .66 | 73 |
| Mathematics | 14.74 | 23.74 | 161 | 19.64 | 13.28 | 68 |
| Physical Sc. | 28.67 | 41.97 | 146 | 56.33 | 28.55 | 51 |
| Psychology | 14.82 | 34.13 | 230 | 11.08 | 10.59 | 96 |
| Pub. Aff. & Serv. | 9.35 | 13.42 | 144 | 1.27 | 1.55 | 122 |
| Social Sc. | 35.59 | 63.21 | 178 | 32.48 | 23.85 | 73 |
| Technology | .35 | .36 | 103 | | | |
| Interdisc. Studies | | | | | | |
| Subtotal | 441.43 | 671.44 | 152% | 333.24 | 217.01 | 65% |
| Miscellaneous Calssification | | 8.33 | | | 2.52 | |
| Total | 441.43 | 679.77 | 154% | 333.24 | 219.53 | 66% |
| Percent of all Levels | 11.35% | 20.23% | | 8.57% | 6.53% | |

Sources: Budget - Florida, *1974-75 Allocation of the Education and General Lump Sum Appropriation, State University System*, July 18, 1974, Tables 1-16.

Actual - Florida, *Computer Data Files of Instructional Activity and Academic Assignment, Academic Year 1974-75* (provided by Information Services Office, Tallahassee, Florida, 1975).

TABLE 9

State University System of Florida
Budgeted Full Time Equivalent Faculty Compared to Total Actual Utilization Faculty,
All Levels, Academic Year 1974-75

| | Budgeted | | Actual | | Actual as a Percent of Budget |
|---|---|---|---|---|---|
| | FTEs | Percent of all Disciplines | FTEs | Percent of All Disciplines | |
| Ag. & Nat. Res. | 2.14 | .06% | 5.27 | .16% | 246% |
| Arch. & Env. Des. | 51.13 | 1.31 | 53.49 | 1.62 | 105 |
| Area Studies | 6.98 | .18 | 4.54 | .14 | 65 |
| Biological Sc. | 182.87 | 4.71 | 143.17 | 4.32 | 78 |
| Bus. & Mgt. | 495.40 | 12.74 | 370.90 | 11.20 | 75 |
| Communications | 177.84 | 2.00 | 66.70 | 2.01 | 86 |
| Comp. & Info. Sc. | 24.66 | .63 | 16.69 | .50 | 68 |
| Education | 803.76 | 20.67 | 659.06 | 19.90 | 82 |
| Engineering | 190.92 | 4.91 | 180.31 | 5.44 | 94 |
| Fine & Apl. Arts | 268.34 | 6.90 | 338.10 | 7.19 | 89 |
| Foreign Lang. | 111.32 | 2.86 | 115.60 | 3.49 | 104 |
| Health Prof. | 102.74 | 2.64 | 62.66 | 1.89 | 61 |
| Home Econ. | 34.95 | .90 | 36.85 | 1.12 | 105 |

| | | | | | |
|---|---|---|---|---|---|
| Law | 47.12 | 1.21 | 45.53 | 1.37 | 97 |
| Letters | 361.04 | 9.29 | 288.36 | 8.71 | 80 |
| Library Sc. | 14.48 | .37 | 10.83 | .33 | 75 |
| Mathematics | 183.77 | 4.73 | 184.24 | 5.56 | 100 |
| Physical Sc. | 285.30 | 7.34 | 251.19 | 7.59 | 88 |
| Psychology | 127.71 | 3.28 | 113.38 | 3.42 | 89 |
| Pub. Aff. & Serv. | 58.58 | 1.51 | 42.77 | 1.29 | 73 |
| Social Sc. | 434.76 | 11.58 | 375.49 | 11.34 | 86 |
| Technology | 20.48 | .58 | 17.40 | .53 | 77 |
| Interdisc. Studies | | | 29.08 | .88 | 0 |
| Subtotal | 3888.29 | 100.00% | 3311.61 | 100.00% | 85% |
| Miscellaneous Classification | | | 47.33 | | |
| Total all Levels | 3888.29 | | 3358.94 | | 86% |

Sources: Budget - Florida, 1974-75 Allocation of the Education and General Lump Sum Appropriation, State University System, July 18, 1974, Tables 1-16.

Actual - Florida, Computer Data Files of Instructional Activity and Academic Assignment, Academic Year 1974-75 (provided by Information Services Office, Tallahassee, Florida, 1975).

of any summarization or consolidation made by the universities or the SUS office. The actual reports submitted on each faculty member at each university in each quarter were recorded in the computer.

Tables 7, 8, and 9 summarize respectively the undergraduate, graduate, and total faculty full time equivalent (FTE) budgeted figures compared to actual assignments as recorded on faculty activity reports on each individual faculty member during 1974-75. These actual figures are recorded intact by the individual universities in the computerized information system. All of the university computer systems are integrated so that the SUS office can obtain all of the information directly from the computer. This also assumes that there should be more standardization of the data since it is reported at the lowest level of aggregation, the individual faculty member. It is also supposedly current (real time) information since it is to be recorded for each quarter individually as soon as the faculty activity reports are computerized at the universities.[5] Each faculty member and his direct academic supervisor should verify the data on each individual report. In previous years universities aggregated information on faculty utilization from reports that were not standard in format or classification.

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[5] Florida, Letter on Faculty Activity Assignment Form (Tallahassee, Florida: Board of Regents, State University System of Florida, September 24, 1973; modified by similar letter January 16, 1975).

The first conclusion from observing the data in Tables 7, 8, and 9 is that there are significant variations between budget allocations and actual utilization by discipline category and level of instruction. Those disciplines with very small authorizations may be disregarded since any wide percentage variations may be explainable by the small numbers. It is apparent, however, that many disciplines whose authorizations are significant have an actual utilization that is materially different from that allocated by the budget model.

Note that Tables 7, 8, and 9 have a category at the bottom called "Miscellaneous Classifications." This was necessary since all nine universities made some apparent classification errors for some faculty members. An investigation into the source of this error by sampling the data files at Florida and Florida Technological determined all those sampled were academic administrators. The files at Florida included names and known social security numbers were used at Florida Technological. When those administrators taught a course the instruction should have been classified according to the discipline taught. In the cases discovered in the computer, some spurious number (for instance 0 or 99) was placed in the discipline category item space. The total impact of this misclassification was 1.4 percent of the total actual FTEs.

An example of the difference between budget allocation and utilization is biological science. Note that actual versus budget is 66 percent at the lower level, 71 percent at the upper level, 183 percent at the beginning graduate level, and 67 percent at the advanced graduate level. For all levels together actual utilization is 78 percent of the FTEs authorized for that discipline. The major contributor to the variation at the lower level is one university. The University of South Florida used only 45 percent of the allocations to that university for biological sciences at the undergraduate levels (17.53 of 38.63 budgeted). This may be the result of a different mode of instruction which requires fewer faculty members per student. There are also other possible causes. It also indicates that the use of weighted average productivity factors determined directly from historical data of the previous year is not necessarily an accurate measure of the relative utilization (faculty to student ratio) required at a specified level of instruction or discipline category at a particular university for the budget year.

Several other examples of the situation discussed above concerning biological sciences are apparent from Tables 7, 8, and 9. Using only those discipline categories with large numbers of budgeted and actual FTEs, there are wide variations between budgeted and actual figures. Business and management used 60 percent of budgeted allocations at the lower level, 68 percent at the upper level, 157 percent at the beginning graduate level, 65 percent at the advanced graduate level, and 75 percent average for all levels. Analysis of the data for individual universities indicates that all used less FTEs than budgeted for business and management at both undergraduate levels. At the beginning graduate level seven universities used more FTEs than budgeted for this discipline. The exceptions were the two newest universities, Florida International and North Florida.

Education has a slightly different pattern using 110 percent of budgeted at the lower level, 66 percent at the upper level, 147 percent at the beginning graduate level, 62 percent at the advanced graduate level, and 82 percent average for all levels. Florida and Florida State used more FTEs than budgeted for education at the lower level while the other three universities used less than budgeted for that discipline. All nine universities used less than budgeted for education at the upper level. At the beginning graduate level eight universities used more FTEs than budgeted for education. Florida A & M was the exception. Engineering follows a pattern very similar to education. Fine and applied arts used 83 percent of budgeted at the lower level, 86 at the upper level, 131 percent at the beginning graduate level, 92 percent at the advanced graduate level, and 89 percent average for all levels. Other disciplines with significant percentages of total FTEs having patterns similar to one of the above examples were foreign languages, letters, mathematics, physical science, psychology, and social science.

Another significant observation from Tables 7, 8 and 9 is that at the lower level overall budgeted FTEs compared to actual was 87 percent, which is relatively close to budgeted in comparison to the other levels. The budget allocated 18.85 percent of the total FTE instructional positions to the lower level and the actual utilization was close to that at 19.08 percent. There was not complete consistency by university. Four of the five universities used less than budgeted. One used slightly more than budgeted. Even though the overall actual figure was 87 percent of the budgeted figure (641 actual versus 733 budgeted), there were wide variations by discipline category. The range of numerically significant disciplines was from 56 percent for psychology to 164 percent for engineering. The conclusion to be reached from this analysis is that what the budget forecast would happen did not occur. The budget was based on actual enrollment data in the previous academic year, 1973-74, by discipline category and level of instruction. The budget was also computed on 1973-74 weighted average productivity factors by discipline category and level of instruction. Based on the evidence of the actual assignments at the lower level, either the distribution of students by discipline category was significantly different than that predicted, or the weighted average productivity factors used by discipline category were not representative of the actual practice in individual universities throughout the system. Sixteen disciplines used less than budgeted FTEs and six disciplines used more than budgeted at the lower level on an aggregate basis. Each of the five universities used slightly less FTEs than budgeted university wide but in 14 percent of the cases within universities individual disciplines used more FTEs than budgeted. South Florida was the only university using less FTEs than budgeted in all disciplines programmed at the lower level.

Analysis of the actual assignments versus the budgeted FTEs at the other levels is even more complex than that at the lower level. There is a wide variation in total FTEs used versus budgeted in addition to the variation by discipline category.

At the upper level of instruction the overall average utilization as a percentage of budgeted FTEs was 76 percent. The budget predicted that 2,381 FTE instructors would be required and only 1,818 were actually assigned to courses at that level. It is possible that this is due to a significantly smaller enrollment than forecast at the upper level. The variations by discipline category are also significant. Using only those disciplines with material numbers of faculty members, the range of variations between actual and budgeted FTEs is from 53 percent for health professions to 117 percent for technology. Eighteen disciplines used less than budgeted FTEs and five used more. The budget allocated 61 percent of the total FTE instructor positions to the upper level but there were only 54 percent of the total actually assigned to that level. As far as the distribution by universities was concerned all used less FTEs than budgeted at the upper level ranging from 65 percent to 99 percent (Table 10). However, in 22 percent of the cases within universities, disciplines used more than budgeted. Again, South Florida was the only university using less than budgeted FTEs in all disciplines programmed.

At the beginning graduate level the overall average actual utilization as a percentage of budgeted FTEs was 154 percent. The three disciplines, other than law, using less than budgeted FTE represented relatively small numbers of FTEs, therefore, their variance is not considered significant. Those that were significant had a utilization ranging from 85 percent of budgeted for law to 230 percent for psychology. Foreign language and home economics had larger percentages but relatively insignificant numbers of FTEs.

## TABLE 10

State University System of Florida
Academic Year 1974-75, Actual Full Time Equivalent Instructional Faculty
as a Percentage of Budgeted, by University and Level of Instruction

| | L E V E L | | | | |
|---|---|---|---|---|---|
| University | Lower | Upper | Beginning Graduate | Advanced Graduate | All Levels |
| Florida | 102% | 87% | 143% | 61% | 93% |
| Florida State | 84 | 71 | 129 | 70 | 82 |
| Florida A & M | 71 | 99 | 94 | | 87 |
| South Florida | 78 | 70 | 201 | 61 | 84 |
| Florida Atlantic | | 92 | 177 | (a) | 103 |
| West Florida | | 20 | 135 | | 89 |
| Florida Technological | 80 | 71 | 223 | | 82 |
| Florida International | | 67 | 197 | | 76 |
| North Florida | | 65 | 162 | | 76 |
| All Universities | 87% | 76% | 154% | 66% | 86% |

Sources: Budget - Florida, 1974-75 Allocation of the Education and General Lump Sum Appropriation, State University System, July 18, 1974, Tables 1-16.

Actual - Florida, Computer Data Files of Instructional Activity and Academic ASsignment, Academic Year 1974-75 (provided by Information Services Office, Tallahassee, Florida, 1975).

(a) No advanced graduate FTEs budgeted, but a total of 3.32 FTE's assigned.

The budget allocated 11 percent of total FTEs to this level while 20 percent were actually assigned to that level. Enrollment data will be used later in an attempt to determine whether the major reason for this was more students at this level than the budget model used or some other possible factor. Examination of the data by university divulges that the largest variances in terms of percentages occurred at South Florida and Florida Technological (Table 10). These two universities used over 200 percent of the FTEs budgeted for the beginning graduate level. The largest variations in terms of numerical difference, however, were the three largest universities. These universities accounted for 154 of the total 239 difference in FTEs between actual and budget (680-441) at the beginning graduate level. Florida A & M was the only university where actual utilization was less than budgeted. The difference was only one FTE (16.89 budgeted versus 15.88 used). South Florida who was noted to have used less than budgeted in all disciplines at the lower and upper levels used more than budgeted in all disciplines at the beginning graduate level. There were only 5 percent of the cases within all universities where less FTEs were used than budgeted. This 5 percent represented only five actual examples at the beginning graduate level. Two of these examples were at Florida A & M.

There is another major finding from the comparison of budgeted FTEs versus actual allocations at the beginning graduate level; the relative consistency of the case of law. There was a classification problem however. Note that 1.26 FTEs were reported at the upper level and 4.12 FTEs at the advanced graduate level (the University of Florida in both cases). These FTEs should have been reported at the beginning graduate level. Referring to Table 9, the total variance between budget and actual FTEs for law was relatively insignificant (47.12 versus 45.53). This consistency is explainable since the enrollment of students is controlled and, therefore, faculty requirements can be predicted accurately in advance. This characteristic of professional schools is interesting and there could be consideration of expanding this to other disciplines. The feasibility of operational implementation of this controlled enrollment philosophy to solve all of the budgeting problems in higher education is questionable. Enrollment in the discipline must be controlled with a finite ceiling. While this characteristic has some attractive budgeting advantages, there are likely to be philosophical objections within academia to the use of controlled enrollment as a general policy, except for the professional schools. Assuming that this objection could be overcome, the feasibility of rigidly controlling enrollment in some disciplines is questionable because of interdependencies (the requirement for service courses and general electives from other disciplines), particularly at the undergraduate level. Enrollment of majors in each discipline could be limited. To achieve complete control it would be necessary to specify an exact curricula for each major or at least control the number in each specialized area within a major.

At the advanced graduate level the average utilization of budgeted FTEs was 66 percent for all disciplines. Five disciplines used more than budgeted FTEs while fourteen disciplines used less than budgeted. The budget allocated 8.6 percent of total FTE instructors to this level. Actual utilization was only 6.5 percent of the total. Each of the three universities with advanced graduate programs used less at that level than budgeted which indicates the same general pattern of consistency in direction noted for the beginning graduate level. Only the three largest universities, Florida, Florida State, and South Florida, have advanced graduate (doctoral) programs. There are a few small cooperative programs where doctoral students do some portions of their course work at one of the other universities. The exceptions are insignificant as far as numbers of students and faculty workload is concerned. Even South Florida's total advanced graduate program was relatively insignificant in amount in 1974-75. Only 13.05 faculty spaces were allocated (3.9 percent of the total allocations at that level) and only 7.88 utilized (3.6 percent of the total utilized at that level).

## Summary

In reviewing the working tables by university, certain patterns were evident. The more mature universities generally had wider variations between budgeted and allocated spaces in all classifications (discipline by discipline) than the newer universities. The possible reasons behind this tendency could be speculated on although the data did not provide conclusive evidence. Since these universities have been in existence longer, they are likely to be less able to change the numbers of faculty members by discipline rapidly enough to respond to changing patterns of enrollment. Since their faculty as a whole is more mature, the percentage of tenured versus nontenured is likely to be higher than that of the newer universities. For this reason, the faculty itself is likely to be less likely to be in favor of rapid changes in program emphasis and priority. This is particularly noticeable in disciplines such as education, fine and applied arts, foreign language, letters, mathematics, physical sciences, and to lesser extent biological sciences and engineering. Actual utilization is higher than earned allocations in many cases in these disciplines at the three older universities (Florida, Florida State, Florida A & M) at the undergraduate levels. As noted earlier utilization at the advanced graduate level was consistently under the earned allocations. The advanced graduate area will be more completely analyzed when enrollment data are reviewed in Chapter V. The evidence points to a basic inconsistency between enrollment data, productivity factors, and actual assignments at this level.

Based on the data presented in Tables 7, 8, 9, and 10, it could be concluded that the overall (average) relationship between productivity factors and enrollment was only slightly inaccurate at the lower level; that either the enrollment was lower than anticipated or productivity factors were higher than necessary at the upper level; that either enrollment was higher than expected or productivity factors lower than required at the beginning graduate level; and that it is likely that enrollment was lower than expected and productivity factors lower than required at the advanced graduate level.

The tables indicate the significant variations within disciplines at various levels of instruction when actual assignments are compared to budget allocations. The working papers used to construct the tables also indicate wide variations between actual and budgeted within a particular discipline from university to university at the same level. This may result from several possible causes. Actual enrollment in this discipline at a particular level may have varied from the budget factor, in opposite directions from university to university. The permanent faculty at one university may be a larger portion of the total faculty at another university in the same discipline. This would impair the flexibility to respond to reducing enrollments. The policies and perceptions of individual department administrators and faculty for a discipline may vary between universities as to the number of courses required at each level of instruction or the mode of instruction required for particular courses.

## Other Assignment Categories

Up to this point all of the discussion in this chapter has been on instruction. Table 11 summarizes the comparison of all faculty assignment categories. This is important because of the interrelations involved. Each faculty member's employed time, usually 100 percent for regular faculty but less for temporary faculty and graduate assistants, is classified in percentages devoted to the various categories as assigned to that faculty member. The data in Table 11 were rounded to even numbers.

TABLE 11

State University System of Florida
Budgeted Full Time Equivalents Compared Actual
in All Assignment Categories, by University, Academic Year 1974-75

| | | Instruction | Research | Public Service | Academic Counseling | Academic Administration | Research | Total |
|---|---|---|---|---|---|---|---|---|
| Florida | B | 1007 | 178 | 13 | 71 | 94 | | 1363 |
| | A | 939 | 202 | 35 | 53 | 126 | | 1355 |
| | D | - 68 | +24 | +22 | -18 | +32 | | - 8 |
| Florida State | B | 840 | 166 | 11 | 60 | 81 | | 1158 |
| | A | 690 | 199 | 42 | 55 | 112 | | 1098 |
| | D | -150 | +33 | +31 | - 5 | +31 | | - 60 |
| Florida A & M | B | 209 | 15 | 2 | 15 | 16 | | 257 |
| | A | 182 | 11 | 0 | 9 | 33 | | 235 |
| | D | - 27 | - 4 | - 2 | - 6 | +17 | | - 22 |
| South Florida | B | 684 | 65 | 9 | 56 | 60 | | 874 |
| | A | 573 | 97 | 27 | 48 | 104 | | 849 |
| | D | -111 | +32 | +18 | - 8 | +44 | | - 25 |
| Florida Atlantic | B | 231 | 27 | 3 | 18 | 20 | | 299 |
| | A | 239 | 35 | 11 | 17 | 46 | | 348 |
| | D | + 8 | + 8 | + 8 | - 1 | +26 | | + 49 |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| West Florida | B | 187 | 18 | 2 | 14 | 15 | | 236 |
| | A | 166 | 9 | 3 | 15 | 25 | | 218 |
| | D | - 21 | - 9 | +1 | + 1 | +10 | | - 18 |
| Florida Technological | B | 272 | 21 | 3 | 22 | 23 | | 341 |
| | A | 223 | 19 | 17 | 23 | 46 | | 328 |
| | D | - 79 | - 8 | +18 | + 3 | +32 | | - 34 |
| North Florida | B | 133 | 9 | 2 | 9 | 9 | | 162 |
| | A | 101 | 4 | 2 | 13 | 33 | | 153 |
| | D | - 32 | - 5 | 0 | + 4 | +24 | | - 9 |
| Reserve | | | | | | | | 2 |
| State University System | B | 3888 | 526 | 49 | 295 | 345 | 2 | 5105 |
| | A | 3359 | 595 | 159 | 266 | 584 | | 4963 |
| | D | -529 | +69 | +110 | -29 | +239 | -2 | -142 |

Note: Some slight differences from other tables due to rounding.

B = Budgeted; A = Actual; D = Difference

Sources: Budget - Florida, *1974-75 Allocation of the Education and General Lump Sum Appropriation, State University System*, July 18, 1974, Tables 1-16.

Actual - Florida, *Computer Data Files of Instructional Activity and Academic ASsignment, Academic Year 1974-75* (provided by Information Services Office, Tallahassee, Florida, 1975).

The State University System as a whole, according to the recorded data, used a total of 4,963 faculty FTEs on a four-quarter average basis. Budget allocations were 5,105 FTEs. There were an average of 529 authorized instructional faculty FTEs unutilized in that category. Most of these FTEs were used in other assignment categories. Academic administration absorbed 239 more FTEs than allocated by the budget model (a 60 percent increase). Research occupied sixty-nine more FTEs than allocated (a 13 percent increase). Public service rose by 110 FTEs over the budget allocation (a 269 percent increase). Academic counseling was the only other category of assignment using less than budgeted (a 10 percent decrease).

Some of the trends or tendencies disclosed in Table 11 are interesting and may be important to the conclusions of this study. Eight universities (all except Florida Atlantic) used less FTEs in the instruction category than budgeted. Was this because the productivity factors for instruction (faculty-student ratio) in the budget model were higher than necessary? The relative priority, or need, to have more faculty involved in other assigned categories may also be a factor.

All of the more mature universities except Florida A & M used more faculty in research than the budget model allocated. The recently established universities (since 1968) did not use all of the research FTEs authorized. The definition of research in the system during 1974-75 included three categories: (a) artistic creativity and performance, (b) state funded (education and general research), and (c) contract and grant research.[7] It did not directly include the type of research a faculty member is expected to do to maintain professional competence in his academic discipline. Some sponsored research (b and c above) cculd also result in professional development. These definitions were slightly modified in January 1975; (a) scholarly and creative activities necessary to maintain professional competency and teaching effectiveness, (b) artistic creativity and performance, (c) state funded (education and general) research, (d) contract and grant research. Category (a) poses a problem in interpretation. At Florida Technological University this requires a project number and funding from the Director of Institutional Research. The project must be completely described and target dates identified.

An outsider to academia might question why the equivalent of 202 full-time faculty members of the University of Florida or 199 at Florida State University or 97 at the University of South Florida should be required for sponsored research. The total of 595 in the SUS at the average four-quarter salary for the 1974-75 academic year ($21,439) would result in an expenditure of $12,756,205. The budget factors used for this activity should be fully justifiable and explainable in terms which the general public and even legislators can understand.[8] Those within academia have little difficulty understanding the requirement for some level of sponsored research. They may quarrel about why economics does not qualify for more or why letters receives such a high percentage, for example.

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[7] Florida, Letter on Faculty Activity Assignment Form, pp. II-51-52.

The ratio of research to instruction at individual universities could be questioned on the grounds of the stated SUS policy of equal funding for comparable programs.[9] Based on a percentage of actual research compared to instruction (four-quarter average) for the 1974-75 academic year the comparison is Florida 22 percent, Florida State 29 percent, Florida A & M 13 percent, South Florida 17 percent, Florida Atlantic 15 percent, West Florida 5 percent, Florida Technological 9 percent, Florida International 8 percent, and North Florida 4 percent.

Those within academia would understand the fact that universities with Ph.D. programs are likely to require more research oriented faculty. The central question here is should the budget model recognize this difference in a more direct fashion?

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[8] Lawrence, pp. 147-148.

[9] Florida, Change by Design, p. 12.

The public service analysis in Table 11 indicates two possible areas for improvement. Neither will be directly analyzed in this study. It seems logical, however, that the universities are involving their faculty in more public service activities than the SUS office considers necessary, or the budget model should authorize a larger number of public service positions.

Essentially the same comments made concerning public service are appropriate for academic administration. Public universities are cumbersome and difficult to manage and may require more administrators than the current Florida SUS budget model provides.

One factor that should be considered in this discussion is the possibility of erroneous classification within those other categories of faculty effort. No empirical evidence was uncovered in this study on this subject. Informal discussions with responsible academic administrators and institutional researchers frequently gave attention to this problem. Individual perceptions do have a tendency to enter into classification decisions. What one individual considers research may be perceived and classified as public service or academic administration by another individual even though the formal guidance defines these terms. Information theory or information systems theory includes this general subject. The problem is obtaining accurate information which is correlated with the requirement for decision making involved.[10] The tendency is for intermediate managers and even production workers, who have to report on their performance, to report what they perceive will have a positive impact on their own goal attainment. Part of this is a communication problem. The decision makers have not convinced the reporters of the exact purpose of the data accumulation. If there are options in classification or allocation between alternative categories, and doubts about the ultimate utilization of the data, accuracy may suffer. The best approach to this problem appears to be to develop standards for all outputs. Then comparisons can be made of inputs and outputs and variances from standard inputs analyzed.[11] This technique is attractive in the case of higher education, but may not be operationally feasible due to the difficulty of establishing standards.

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[10] Sam E. Scharff, "The Industrial Engineer and the Cost Accountant," National Association of Accountants Bulletin, No. 7, Section 1; George P. Schultz, "Worker Participation in Production Problems," Personnel, 29(3) (1951), 209-210.

[11] Horngren, pp. 169-171.

# CHAPTER V

# INSTRUCTIONAL ACTIVITY AND PRODUCTIVITY
ACADEMIC YEAR 1974-75

## The Data Base

There was much difficulty within the instructional activity file. Significant portions were not received until Arpil 7, 1976 (see Table 6, Chapter IV). The file is a variable length file and therefore evidently more difficult to extract data from since the exact location of specific items must be determined for each report. In early May, 1976, it was discovered that none of the summer, 1974, data (received in April, 1976) was usable since it was completely incompatible with the fall, winter, and spring quarter files. Therefore, it was necessary to apply the adjustment factors discussed previously in order to compute a four-quarter average which would be compatible with the faculty data in Chapter IV. This adjustment was made based on the relationship between the summer quarter, 1973, enrollment at each university with the total fall, winter, and spring quarters of academic year 1973-74. All of the winter quarter data for South Florida were recorded without discipline category classification. This required an additional adjustment assuming the same relative distribution by discipline reported in the other quarters.

There were also some classification errors that were noted as the data were analyzed. Some of these were minor and could be corrected. An example is that Florida A & M had reported FTE faculty assigned to the engineering discipline but the registrars' data in the instructional activity file indicated no classes in engineering. Since Florida A & M has no engineering school, it was concluded that the FTE faculty should have been reported in engineering technology. There were also a few cases where the instructional activity file indicated a small number of student credit hours in a discipline where there had been no FTE faculty assigned in the academic assignment file. Part of this was very likely caused by the minor problem reported in Chapter IV where some administrator's FTEs were not classified by discipline but by some miscellaneous numbers (see Tables 7, 8, and 9 in Chapter IV). Since this only amounted to 1.4 percent of the total, it was ignored. All of the student credit hours were included, however, along with the FTE faculty, in computing overall university productivities.

## Overall Productivity by University

Table 12 compares the overall productivity factors in the budget document with the actual productivities by

## TABLE 12

### State University Systems of Florida
### Budgeted Productivity Factors by University and Level of Instruction Versus Actual Productivity Factors (Student Credit Hours per FTE Faculty Member)

| University | Lower Level | | Upper Level | | Graduate Level | |
|---|---|---|---|---|---|---|
| | Budgeted | Actual | Budgeted | Actual | Budgeted | Actual |
| Florida | 392.23 | 265.27 | 286.98 | 298.32 | 187.39 | 219.85 |
| Florida State | 391.04 | 396.16 | 290.02 | 374.85 | 180.94 | 180.36 |
| Florida A & M | 382.53 | 357.07 | 278.14 | 207.81 | 224.10 | 312.36 |
| South Florida | 415.15 | 500.16 | 293.42 | 364.00 | 272.35 | 230.78 |
| Florida Atlantic | | | 291.58 | 178.88 | 223.93 | 180.35 |
| West Florida | | | 301.34 | 339.99 | 204.30 | 221.50 |
| Florida Technological | 397.46 | 470.03 | 290.00 | 358.81 | 216.98 | 234.75 |
| Florida International | | | 284.71 | 313.18 | 234.84 | 277.85 |
| North Florida | | | 310.90 | 341.39 | 236.79 | 333.75 |
| State University System Average | 396.01 | 417.74 | 290.74 | 319.81 | 193.47 | 243.50 |

Source: Budget - Florida, *1974-75 Allocation of the Education and General Lump Sum Appropriation, State University System*, July 18, 1974, Tables 1, 2, 3, 5, 13, and 15.

Acutal - Florida, *Computer Data Files of Instructional Activity and Academic Assignment, Academic Year 1974-75* (provided by Information Services Office, Tallahassee, Florida, 1975).

Note: At the graduate level the figures for Florida, Florida State, and South Florida have been adjusted since the instructional activity file did not classify advanced graduate courses separately. The budget figures represent an average productivity based on the relationship of budgeted advanced graduate student credit hours to total graduate credit hours. The actual figures have been adjusted to give advanced graduate productivity to the percent of total student credit hours represented by the advanced graduate faculty assignment by FTE.

university and level of instruction as indicated by the computer data. One of the major problems in classification was that the registrars' reports (instructional activity file) did not include any classification of courses by level. It was necessary to use the course number with the assumption that all courses numbered between 100 and 299 were lower level and all courses numbered between 300 and 499 were upper level courses. There was no way to discriminate between beginning graduate and advanced graduate courses. In analyzing this problem it was concluded that the State University System office must have some method of discriminating between these courses at the graduate level. After many discussions with numerous individuals in both the Management Information Systems and Planning and Analysis Divisions of the State University Systems office, it was discovered that no such method existed. Productivity factors and estimated enrollments for beginning and advanced graduate levels had been computed from the level of the student enrolled in the courses, rather than from the courses themselves.

In other words, if a beginning graduate student enrolled in any 500 level or higher course it was counted for beginning graduate credit even if the course were numbered at the 700 level. An advanced graduate student, enrolled in any course above the 500 level, increased the advanced graduate credit for the university. An official of the SUS office stated in March of 1976 in a telephone call that elimination of the distinction between beginning and advanced graduate levels was being considered. This was subsequently confirmed.[1]

It was decided to accumulate graduate credit hours from the computer and adjust the figures for the three universities with advanced graduate programs based on two criteria. The budgeted data would be adjusted to show an average productivity based on the budget projections of advanced versus beginning graduate student credit hours proportionately for each university. The actual data would use this relationship to alter the graduate productivity and consider the percentage of actual FTE faculty members assigned to advanced graduate instruction versus the total graduate instruction in each discipline. It seemed logical that when a faculty member was assigned to an advanced graduate course he and his immediate administrative supervisor must have assumed that it is primarily for students preparing for the Ph.D.

## Overall Lower Level Productivity

It can be seen from Table 12 that overall productivity experienced was higher than budgeted productivity at the lower level. This could be correlated with the fact that only 87 percent of the budgeted lower level faculty was actually assigned to that level (Table 10). This does not necessarily correlate for every university. Florida A & M for instance only assigned 71 percent of earned lower level faculty to that level (Table 10) and productivity decreased. This was probably due to the fact that the budget was based on 28,800 student credit hours (SCH) for Florida A & M at the lower level and only 24,024 SCH were actually recorded.[2] Table 13 indicates that the overall SCH at the lower level were less than budgeted. In fact overall SCH for all levels was 47,866 less than budgeted (Table 13).

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[1] Florida, Education and General Reallocation, State University System, 1975-76 (Tallahassee, Florida: n.p., 1976), Table III.

## Overall Upper Level Productivity

Table 12 also shows that overall productivity at the upper level was higher than budgeted (319.81 SCH per FTE faculty member actual versus 290.74 budgeted). This is again generally correlated by Table 10 which indicates 76 percent of earned FTE faculty were assigned to the upper level. Both Florida A & M and Florida Atlantic are exceptions to the general trend, since their productivities went down. Again, this could be caused by the significant differences in actual and budgeted SCH (Florida A & M was budgeted based on 22,155 SCH and actually recorded only 20,360). Florida Atlantic was budgeted based on 53,970 SCH and actually recorded only 33,334.[3] Table 13 again confirms a general lowering of upper level SCHs over the budgeted figures.

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[2] Florida, 1974-75 Allocation of the Education and General Lump Sum Appropriation, Table 4.

## Overall Graduate Level Productivity

Graduate level productivity comparisons are affected by the inability to directly measure actual advanced graduate SCH. Table 10 indicates that 154 percent of FTE faculty earned at the beginning graduate level were assigned. Only 66 percent of the FTE faculty earned at the advanced graduate level were assigned (Table 8, Chapter IV). Based on the State University System as a whole, 23 percent of total graduate level student credit hours were budgeted at the advanced graduate level.[4] The budget computed 43 percent of total graduate faculty were advanced graduate.[5] The graduate faculty actually assigned to advanced graduate classes was 23 percent (Table 8, Chapter IV; 219.53 divided by 917.3). This is exactly the same percentage as that of the budgeted advanced graduate students to the total graduate

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[3] Ibid., Tables 4 and 6.

[4] Ibid., Table 1.

[5] Ibid., Table 16.

TABLE 13

State University System of Florida Academic Year 1974-75,
Budgeted Student Credit Hours Compared to Actual Student
Credit Hours by Discipline Category and Level of Instruction

| | Lower Level | | Upper Level | | Graduate Level | |
|---|---|---|---|---|---|---|
| | Budgeted | Actual | Budgeted | Actual | Budgeted | Actual |
| Ag. & Nat. Res. | 142.95 | 8.10 | 391.95 | 60.52 | 67.92 | 182.55 |
| Arch. & Env. Des. | 2268.75 | 2653.19 | 7434.60 | 8714.64 | 671.40 | 2840.70 |
| Area Studies | 59.85 | 450.03 | 1527.60 | 1551.45 | 148.68 | 604.36 |
| Biological Sc. | 21912.45 | 20298.47 | 19151.85 | 23459.08 | 4067.84 | 4374.67 |
| Bus & Mgt. | 20140.95 | 18513.66 | 113883.00 | 111466.55 | 11395.92 | 17234.60 |
| Communications | 3983.10 | 3214.45 | 19377.30 | 17132.39 | 1217.04 | 1663.68 |
| Comp. & Info. Sc. | 630.15 | 713.18 | 6184.80 | 5660.08 | 388.40 | 980.30 |
| Education | 13625.55 | 12826.29 | 141638.85 | 108335.32 | 37461.24 | 58140.77 |
| Engineering | 2736.75 | 2908.48 | 23585.70 | 20428.90 | 6800.76 | 5521.84 |
| Fine & Apl. Arts | 15337.70 | 13622.92 | 34216.65 | 30028.21 | 3456.00 | 5872.88 |
| Foreign Lang. | 20265.60 | 18462.46 | 7002.45 | 5713.23 | 1622.76 | 1455.12 |
| Health Prof. | 631.05 | 520.48 | 15714.30 | 10549.02 | 52.44 | 1927.72 |
| Home Econ. | 1964.10 | 2138.67 | 6688.35 | 7193.38 | 816.97 | 1316.83 |
| Law | | | | | 17153.88 | 12410.36 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Letters | 48645.45 | 45598.05 | 48959.25 | 37538.99 | 5639.40 | 6692.57 |
| Library Sc. | 410.25 | 33.49 | 1495.50 | 658.28 | 2087.53 | 1729.53 |
| Mathematics | 24037.80 | 25097.59 | 31290.00 | 34248.16 | 3739.20 | 4778.99 |
| Physical Sc. | 36914.55 | 36335.02 | 22743.60 | 20359.22 | 7518.96 | 5703.78 |
| Psychology | 8036.40 | 7936.58 | 35415.15 | 30106.22 | 5534.40 | 7012.06 |
| Pub. Aff. & Serv. | 229.95 | 76.8 | 13117.95 | 17667.62 | 2319.72 | 3665.15 |
| Social Sc. | 49427.40 | 44902.80 | 81811.65 | 69302.97 | 10952.40 | 12816.43 |
| Technology | 1337.10 | 1250.75 | 2336.40 | 4891.59 | 52.20 | 63.26 |
| Interdisc. Studies | -0- | 711.66 | | | | |
| TOTAL | 272789.55 | 258172.82 | 634101.60 | 565768.25 | 122959.56 | 158043.21 |
| Percent of Total<br>Budgeted: | 26.49% | | 61.57% | | 11.94% | |
| Actual: | | 26.29% | | 57.61% | | 16.10% |

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Source: Budget - Florida, *1974-75 Allocation of the Education and General Lump Sum Appropriation, State University System*, July 18, 1974, Tables 1, 2, 3, 5, 13, and 15.

Actual - Florida, *Computer Data Files of Instructional Activity and Academic Assignment, Academic Year 1974-75* (provided by Information Services Office, Tallahassee, Florida, 1975).

students. This confirms that the large differences in productivities between advanced graduate and beginning graduate are not effective indicators of faculty requirements for those levels.

Overall graduate level productivity increased over that budgeted. Table 13 shows 35,084 SCH more than budgeted.

## Productivity by Discipline Category

Table 13 indicates the overall variations by SCH while Tables 14, 15, and 16 provide more detail on the range of productivity variations from university to university.

Trends are difficult to discover in Table 13 due to the significant decrease in overall SCH at the lower and upper levels and the increase at the graduate level. Notable, however, is architecture and environmental design where actual SCHs were higher than budgeted in spite of the general trend. Biological sciences reversed the general trend at the upper level. Engineering increased over budgeted at the lower level but lost ground at the graduate level despite the general increase there. Home economics increased at upper and graduate levels because of the addition of this program at Florida International University. Law decreased at the graduate level largely because of disappointing enrollment at Florida State University. Enrollment expected was 5,280 SCH,[6] actual was only 1,269 SCH. Both figures are on a four-quarter average basis. Mathematics increased at the lower and upper levels despite the overall decreases in enrollment.

A general conclusion to be reached by analysis of Table 13 is that predictions by discipline category based on the previous year's enrollment are uncertain.

## The Range of Productivities by Discipline Category from University to University

Most crucial to this study is the analysis of the usage of productivities by discipline category from university to university.

Just analyzing the significant disciplines in total SCH in Table 14 (lower level) discloses some interesting information. All five lower level universities had better than the budgeted productivity for biological sciences even though overall SCHs were less than budgeted (Table 13). In business and management only Florida A & M had a productivity which was less than that budgeted. In education overall productivity went down but only Florida and Florida State had lower productivities than budgeted (South Florida 402.51 and Florida Technological 421.98). Note the wide

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[6] Ibid., Table 3.

TABLE 14

State University System of Florida, Academic Year 1974-75, Budgeted Productivity Compared to Actual Productivity by Discipline Category with Range of Productivities Indicated by University, Lower Level

| | Budgeted Productivity Factors | Actual Productivity Factors | Highest Productivity Factor | University | Lowest Productivity Factor | University |
|---|---|---|---|---|---|---|
| Ag. & Nat. Res. | 377.94 | 4.74 | 4.74 | | | |
| Arch. & Env. Des. | 239.49 | 284.37 | 1182.50 | FSU | 280.5 | UF |
| Area Studies | 373.15 | 443.45 | (a) | | | |
| Biological Sc. | 426.78 | 566.68 | 712.52 | FAMU | 456.48 | FTU |
| Bus. & Mgt. | 406.26 | 526.69 | 678.10 | UF | 145.93 | FAMU |
| Communications | 342.60 | 411.13 | 459.29 | UF | 376.45 | FTU |
| Comp. & Info. Sc. | 440.13 | 3100.78 | (b) | | | |
| Education | 377.94 | 307.73 | 540.35 | FAMU | 152.81 | FSU |
| Engineering | 292.12 | 301.70 | 486.34 | FTU | 134.21 | UF |
| Fine & Apl. Arts | 225.36 | 228.80 | 310.99 | FSU | 93.46 | FAMU |
| Foreign Lang. | 337.88 | 331.70 | 358.81 | UF | 171.06 | FAMU |
| Health Prof. | 206.73 | 193.48 | (c) | | | |
| Home Econ. | 375.61 | 409.70 | 467.74 | FAMU | 394.73 | FSU |
| Law | | | | | | |
| Letters | 380.05 | 415.13 | 707.51 | FTU | 395.42 | FAMU |

| | | | | | | |
|---|---|---|---|---|---|---|
| Library Sc. | 430.56 | 372.11 | (d) | | | |
| Mathematics | 562.24 | 546.10 | 706.38 | USF | 402.29 | FTU |
| Physical Sc. | 398.32 | 420.34 | 492.89 | FSU | 147.87 | FTU |
| Psychology | 611.62 | 1024.07 | 1583.21 | USF | 668.75 | FAMU |
| Pub. Aff. & Serv. | 389.42 | 698.18 | (d) | | | |
| Social Sc. | 507.60 | 546.39 | 648.31 | FSU | 467.53 | UF |
| Technology | 179.88 | 133.70 | (c) | | | |
| Interdisc. Studies | 0 | 28.40 | (d) | | | |
| Average All Disciplines | 396.01 | 419.17 | | | | |

(a) Only one university reported both student credit hours and FTE faculty assigned.

(b) Only FTU offered this discipline at the loer level.

(c) Only FAMU offered this discipline at the lower level.

(d) Only FSU offered this discipline at the lower level.

Source: Budget - Florida, 1974-75 Allocation of the Education and General Lump Sum Apporpriation, July 18, 1974, Tables 1, 2, 3, 5, 13, and 15.

Actual - Florida, Computer Data Files of Instructional Activity and Academic Assignment, Academic Year 1974-75 (provided by Information Services Office, Tallahassee, Florida, 1975).

range in engineering even though overall productivity slightly increased. It is also apparent that Florida Technological University is using some different approach to teaching letters. The difference in SCH between the two extremes shown is slight (3,806.41 SCH, four-quarter average, at FTU versus 3,942.38 SCH, four-quarter average at FAMU). In mathematics South Florida has evidently discovered a method of increasing productivity (Florida is also above the average productivity with 631.48 SCH per FTE faculty).

A general conclusion to be drawn from Table 14 is that there are wide variances in productivities by discipline category from university to university.

At the upper level where the majority of the workload occurs (57.61) percent of total actual as indicated in Table 13) there are also wide variations in productivity by discipline category from university to university. From the right hand column of Table 15 it is apparent that Florida Atlantic and Florida A & M are having difficulties at this level. Overall productivity has increased over that used in the budget despite a substantial loss in SCH (Table 13). In business and management Florida is leading in productivity with slightly over 15 percent of the total SCH for that discipline.

Again the significant conclusion is that there are wide variations in productivities in the same discipline category from university to university at the upper level.

## TABLE 15

State University System of Florida, Academic Year 1974-75, Budgeted Productivity Compared to Actual Productivity by Discipline Category with Range of Productivities Indicated by University, Upper Level

| | Budgeted Productivity Factors | Actual Productivity Factors | Highest Productivity Factor | University | Lowest Productivity Factor | University |
|---|---|---|---|---|---|---|
| Ag. & Nat. Res. | 285.92 | 18.01 | (a) | | | |
| Arch. & Env. Des. | 218.50 | 258.34 | 653.74 | FSU | 224.75 | UF |
| Area Studies | 380.12 | 529.50 | 769.50 | UF | 404.71 | USF |
| Biological Sc. | 215.37 | 349.30 | 429.44 | FAMU | 169.75 | FSU |
| Bus. & Mgt. | 331.49 | 428.98 | 612.53 | UF | 290.93 | FAU |
| Communications | 335.87 | 333.83 | 485.33 | FUS | 206.09 | UF |
| Comp. & Info. Sc. | 289.22 | 401.42 | 1355.46 | FTU | 251.24 | FAU |
| Education | 306.77 | 307.70 | 422.38 | FTU | 169.54 | FAU |
| Engineering | 197.67 | 216.89 | 349.67 | FTU | 158.88 | FAU |
| Fine & Apl. Arts | 216.11 | 205.65 | 317.29 | FSU | 90.33 | FAMU |
| Foreign Lang. | 194.57 | 137.17 | 238.76 | FTU | 25.87 | FAMU |
| Health Prof. | 177.47 | 201.39 | 365.57 | FTU | 151.74 | FAMU |
| Home Econ. | 272.82 | 314.80 | 348.77 | FIU | 259.91 | FAMU |

| | | | | | | |
|---|---|---|---|---|---|---|
| Law | | | | | | |
| Letters | 308.53 | 283.78 | 560.13 | FTU | 104.09 | FAMU |
| Library Sc. | 343.36 | 190.25 | 237.80 | FSU | 74.75 | FAMU |
| Mathematics | 319.98 | 338.18 | 546.59 | USF | 31.73 | FAMU |
| Physical Sc. | 234.05 | 216.08 | 285.91 | USF | 97.61 | FAU |
| Psychology | 424.83 | 494.27 | 804.97 | FSU | 230.76 | FAU |
| Pub. Aff. & Serv. | 285.14 | 638.05 | 1766.34 | UF | 479.13 | UWF |
| Social Sc. | 340.35 | 336.01 | 425.17 | FSU | 117.54 | FAU |
| Technology | 177.47 | 199.90 | 247.77 | FIU | 90.53 | FAMU |
| Interdisc. Studies | -0- | 167.22 | 223.14 | UWF | 61.37 | FIU |
| Average All Disciplines | 290.74 | 327.31 | | | | |

(a) Only FAMU offers this discipline at the upper level.

Source: Budget - Florida, *1974-75 Allocation of the Education and General Lump Sum Appropriation*, July 18, 1974, Tables 1, 2, 3, 4, 13, and 15.

Actual - Florida, *Computer Data Files of Instructional Activity and Academic Assignment, Academic Year 1974-75* (provided by Information Services Office, Tallahassee, Florida, 1975).

Analysis of the graduate program,while confused by the inability to segregate the advanced graduate courses, provided some interesting information. If the budgeted productivity factors had included those for the advanced graduate program at the level of budgeted advanced graduate credit hours, they would have been considerably lower. The overall budgeted productivity for all disciplines would have been 194.43 SCH per FTE faculty member (23 percent of budgeted SCHs were for advanced graduate and 77 percent for beginning graduate). Advanced graduate productivity was budgeted at 90.23 SCH and beginning graduate for 225.57 SCH.[7]

The actual distribution of the total faculty assigned to graduate classes according to faculty activity reports was 24 percent to advanced graduate and 76 percent to beginning graduate courses.

The actual productivity as adjusted shown in the second column in Table 16 is an improvement over the 194.3 SCH per FTE faculty as shown in the computation above.

Another significant finding is that the graduate productivity at the University of Florida is materially influenced by the law school. If the law school productivity is not included the graduate productivity is reduced to 123.11 instead of the 219.85 shown in Table 12.

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[7] Florida, 1974-75 Allocation of the Education and General Lump Sum Appropriation, Tables 1 and 13.

## TABLE 16

State University System of Florida, Academic Year 1974-75, Budgeted Productivity Compared to Actual Productivity by Discipline Category with Range of Productivities Indicated by University, Graduate Level

| | Budgeted Productivity Factors | Actual Productivity (Adjusted) | Highest Productivity (Adjusted) | University | Lowest Productivity (Adjusted) | University |
|---|---|---|---|---|---|---|
| Ag. & Nat. Res. | 230.33 | 912.73 | (a) | | | |
| Arch. & Env. Des. | 116.16 | 279.48 | 379.59 | FSU | 179.38 | UF |
| Area Studies | 119.42 | 445.31 | 2496.44 | USF | 117.52 | UF |
| Biological Sc. | 162.77 | 122.72 | 153.71 | FTU | 99.56 | FSU |
| Bus. & Mgt. | 254.52 | 231.16 | 379.81 | UNF | 136.95 | UF |
| Communications | 213.83 | 193.67 | 339.42 | UWF | 87.29 | FSU |
| Comp. & Info. Sc. | 264.11 | 415.38 | 534.34 | FTU | 322.59 | UWF |
| Education | 225.29 | 224.66 | 357.00 | FAMU | 184.51 | UF |
| Engineering | 158.17 | 92.16 | 131.01 | FTU | 53.63 | FAU |
| Fine & Apl. Arts | 138.78 | 181.39 | 414.78 | FIU | 55.32 | FAU |
| Foreign Lang. | 198.52 | 86.34 | 104.28 | UF | 50.22 | FAU |
| Health Prof. | 147.69 | 285.57 | 463.80 | FTU | 112.3 | FSU |
| Home Econ. | 233.61 | 161.83 | 206.03 | FIU | 98.26 | FAMU |

| | | | | | | |
|---|---|---|---|---|---|---|
| Law | 374.60 | 280.33 | 336.38 | UF | 102.11 | FSU |
| Letters | 215.47 | 122.66 | 486.33 | UNF | 26.61 | FAMU |
| Library Sc. | 244.45 | 238.62 | 242.31 | FSU | 136.91 | FAMU |
| Mathematics | 159.68 | 133.88 | 545.64 | USF | 49.33 | FTU |
| Phsyical Sc. | 122.57 | 85.54 | 128.03 | UWF | 51.47 | FAU |
| Psychology | 248.39 | 160.12 | 575. | FIU | 69.14 | UF |
| Pub. Aff. & Serv. | 241.62 | 247.65 | 517.48 | FAU | 210.56 | FSU |
| Social Sc. | 243.83 | 136.20 | 267.38 | UNF | 89.70 | FAU |
| Technology | 179.14 | 175.72 | (b) | | | |
| Interdisc. Studies | -0- | -0- | | | | |
| All Disciplines | 225.57 | 204.78 | | | | |

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(a) This was not added in computing overall average since it represented Florida A & M only and could have been caused by an error in classification.

(b) Florida International only.

Source: Budget - Florida, 1974-75 Allocation of the Education and General Lump Sum Appropriation, July 18, 1974, Tables 1, 2, 3, 5, 13, and 15.

Actual - Florida, Computer Data Files of Instructional Activity and Academic Assignment, Academic Year 1974-75 (provided by Information Services Office, Tallahassee, Florida, 1975).

The fact that the budget procedure of the State University System office has been using weighted average productivities as a basis for allocating instructional resources is a two-edged sword. Table 16 illustrates that large programs with low productivity (such as education at Florida) tend to reduce the weighted average productivity and therefore result in more instructional resources being allocated. Conversely small programs with high productivity (such as area studies at South Florida) tend to increase productivity and reduce the instructional resources allocated. The wide variations in productivities in essentially similar discipline programs raises a serious question as to whether allocation of instructional resources should be by discipline categories. A more detailed analysis was made of the lower and upper level undergraduate productivities by discipline category. The results of this analysis are included in Tables 17 and 18.

Table 17 provides this information for all disciplines for all universities with lower undergraduate level programs. While the subject matter in general may be similar, there is strong evidence that there are distinct differences in the results. These differences must be attributable to factors other than the environmental requirements of the discipline itself.

Table 18 provides productivity information at the upper undergraduate level for those five disciplines which employed

TABLE 17

State University of Florida Actual Productivity Factors, by University, for All Disciplines Lower Level, Academic Year 1974-75

| | Florida | Florida State | Florida A & M | South Florida | Florida Technological |
|---|---|---|---|---|---|
| Ag. & Nat. Res. | | | 4.74 | | |
| Arch. & Env. Des. | 280.05 | 1182.50 | | | |
| Area Studies | | | | 443.45 | |
| Biological Sc. | 461.96 | 649.95 | 712.52 | 693.06 | 456.48 |
| Bus. & Mgt. | 678.10 | 661.18 | 145.92 | 541.57 | 447.20 |
| Communications | 459.29 | 429.56 | | | 336.45 |
| Comp. & Info. Sc. | | | | | 3100.78 |
| Education | 259.96 | 152.81 | 546.35 | 402.51 | 421.98 |
| Engineering | 134.21 | | | 332.62 | 486.34 |
| Fine & Apl. Arts | 223.64 | 310.99 | 93.46 | 227.08 | 219.05 |
| Foreign Lang. | 385.81 | 305.18 | 171.06 | 315.45 | 294.03 |
| Health Prof. | | | 193.48 | | |
| Home Econ. | | 394.73 | 467.74 | | |

| | | | | | |
|---|---|---|---|---|---|
| Law | | | | | |
| Letters | 444.44 | 448.53 | 395.42 | 483.37 | 707.51 |
| Library Sc. | | | 372.11 | | |
| Mathematics | 631.48 | 462.13 | 535.74 | 706.38 | 402.29 |
| Physical Sc. | 383.72 | 492.89 | 454.14 | 432.53 | 147.87 |
| Psychology | 1030.26 | 1139.77 | 668.75 | 1583.21 | 729.83 |
| Pub. Aff. & Serv. | | 698.18 | | | |
| Social Sc. | 467.53 | 648.31 | 507.75 | 601.98 | 526.33 |
| Technology | | | 133.70 | | |
| Interdisc. Studies | | 28.48 | | | |

Source: Budget - Florida, 1974-75 Allocation of the Education and General Lump Sum Appropriation, July 18, 1974, Tables 1, 2, 3, 5, 13, and 15.

Actual - Florida, Computer Data Files of Instructional Activity and Academic Assignment, Academic Year 1974-75 (provided by Information Services Office, Tallahassee, Florida, 1975.

TABLE 18

State University System of Florida Comparison of Actual Productivities, by University, for the Five Disciplines with the Highest Number of Full Time Equivalent Faculty Members Assigned During 1974-75 at the Upper Level and Percent of Total Faculty Assigned to These Disciplines

| | Business and Management | Education | Fine & Applied Arts | Letters | Social Science | Percent of Total Faculty Assigned |
|---|---|---|---|---|---|---|
| Florida | 612.53 | 283.28 | 161.78 | 349.41 | 374.21 | 47.33% |
| Florida State | 537.68 | 395.82 | 317.29 | 373.22 | 425.17 | 57.17 |
| Florida A & M | 463.93 | 300.77 | 90.33 | 104.09 | 233.53 | 55.71 |
| South Florida | 382.92 | 305.90 | 294.42 | 411.05 | 416.81 | 73.80 |
| Florida Atlantic | 290.93 | 169.54 | 98.11 | 295.37 | 117.54 | 69.88 |
| West Florida | 508.55 | 316.90 | 241.65 | 265.15 | 343.17 | 67.66 |
| Florida Technological | 389.16 | 422.38 | 215.76 | 560.13 | 333.50 | 59.32 |
| Florida International | 403.68 | 280.62 | 246.62 | 316.03 | 323.29 | 56.66 |
| North Florida | 295.73 | 381.44 | 250.47 | 315.97 | 397.90 | 77.50 |
| Weighted Average: | | | | | | |
| Actual | 428.98 | 307.70 | 205.65 | 283.78 | 336.01 | |
| Budgeted | 331.49 | 306.77 | 216.11 | 308.53 | 340.35 | |

Source: Budget - Florida, 1974-75 Allocation of the Education and General Lump Sum Appropriation, July 18, 1974, Tables 1, 2, 3, 4, 13, and 15.

Actual - Florida, Computer Data Files of Instructional Activity and Academic Assignment, Academic Year 1974-75 (provided by Information Services Office, Tallahassee, Florida, 1975).

the most faculty members at that level (Table 7, Chapter IV). Again, there is strong evidence of relatively wide variability within disciplines from university to university. These five disciplines were not only the largest in total faculty utilization throughout the system (61 percent) they represented a substantial portion of the total faculty utilization at each university as evidenced by the percentages shown in Table 18.

Since there is such wide variance in the productivities experienced, are the assumptions made by the model used for instructional resource allocation in 1974-75 valid? There was no evidence in the data analyzed in this study that the discipline being taught establishes a student to faculty ratio that is different from that of other disciplines. The differences in productivities by discipline category from university to university must result from factors existing at the individual university.

## Level of Instruction Classification Problems

Analysis of the budget model, the budget allocations and the actual data on academic assignments (FTE faculty assigned by discipline category and level of instruction) and instructional activity (SCHs enrolled by discipline category and level of instruction) disclosed some significant classification problems.

One problem has to do with level of instruction. Even considering that in the future there will be no distinction between advanced graduate and beginning graduate, a problem exists at the undergraduate level. There is every reason to believe that there will be continued distinction between the lower undergraduate level and the upper undergraduate level. The State of Florida has established twenty-eight public community or junior colleges whose instruction is limited to the lower undergraduate level (freshman and sophomore). The classification of level of courses as lower or upper undergraduate has been a serious problem since 1971 when a project was established for Statewide Common Course Numbering.[8] The reference page numbers provide a history of the project beginning with the adoption of the principles by the Community College Council of Presidents on August 29, 1971, and the State University System (Council of Academic Affairs) on September 23, 1971.

There have been considerable problems in completing this Common Course Numbering Project. One of the basic problems has been the first digit in a course number which indicates the level of the course. The reference manual includes this information:

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[8] Florida, Discipline Task Force Manual, Department of Education Statewide Common Course Designation and Numbering System (Tallahassee, Florida: n.p., 1974), pp. B-2-1 through B-2-3.

> Upon reviewing the Community College Course Numbering Conversions, it was apparent that courses designated as at the 300 or 400 level in some public senior level institutions are also offered in some community colleges. On the other hand, a review of senior institutions catalogs reveals that they are not consistent in their designation of levels for given courses; that is, some senior institutions offer a given course at the 300 level and some senior institutions offer the same course at the 200 level. There exists belief in some quarters, that senior institutions have raised levels of courses to gain higher levels of funding. . . . Given the dual significance the first digit and the absence of any rational guidelines, it seems apparent that many highly subjective decisions are being made concerning course equivalencies. Registrars are confronted by this problem constantly. Some students are victimized by the practices in the use and interpretation of the first digit.[9]

This problem has been evidenced several times in the analysis of the actual data from the 1974-75 academic year. It was necessary to obtain copies of all of the catalogs or bulletins from the nine state universities in an attempt to discover some of the facts.

The seriousness of this problem is becoming more and more evident now that the nine state universities are charging different tuition rates for lower level, upper level, and graduate level courses beginning in the fall quarter, 1976.[10] Generally for Florida students there will be a difference of $1.50 per credit hour between lower and upper levels. Non-Florida students will pay $12 per credit hour more for an upper level course. The most obvious symptom of this problem exists at the four universities who ostensibly have no lower level programs. The following discussion results from an analysis of this situation.

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[9] Ibid., pp. E-4-2, E-4-3, and E-4-5.

[10] Florida, Minutes of Board of Regents Meeting, March 1, 1976, Pensacola, Florida (Tallahassee, Florida: n.p., 1976), pp. 7-8.

## The Upper Division University

The following is a quotation from the Comprehensive Development Plan (CODE) of the State University System of Florida.

> When the Division of Community Colleges was established in 1957, Junior College graduates were expected to be major input factors to the state universities at the junior level. The logical kind of university to add to an expanding system, therefore, seemed to be the upper division university without freshman and sophomore classes. Instead of increasing the number of traditionally conceived universities, whose first two years would in a large measure be a duplication of lower division programs, the State University System decided to add upper division institutions in order to utilize more effectively the output of Florida's extensive community college structure . . . .
>
> The upper division universities in Florida are attempting to build special programs in partnership with junior colleges in order to provide junior college graduates with opportunity to complete the baccalaureate degree.[11]

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[11] Florida, Comprehensive Development Plan, pp. 11-12.

The interpretation of what was meant by the phrase "without freshman and sophomore classes" could be either that all students would be juniors or higher or that no lower division level classes would be offered in competition with the junior colleges supported by state funds. They infer that the upper division university will be more economical to operate and will reduce overall higher education resource requirements in comparison to establishing full four-year universities. The largest of the upper division universities, Florida International University (FIU), opened in Miami in 1972. The 1974 budget for the SUS estimated enrollment at FIU in that academic year to be 5,435 full time equivalent students and allocated 413 total faculty after distribution of the SUS reserve. Florida Technological University (FTU), on the other hand, was estimated to have an enrollment of 5,139 full time equivalent students and was allocated 341 total faculty after distribution of the SUS reserve.[12]

This meant that for a difference of 296 students, FIU was allocated 72 more faculty numbers than FTU. As part of the current study, an analysis was made of the catalogs of the two universities, with the objective of assessing this situation. It was discovered that although FIU required students to have sixty semester hours or ninety quarter hours in higher education credits, there was ample opportunity for students to take prerequisite courses at FIU to qualify for a degree even though these courses could have been taken at the lower level at the five four-year undergraduate institutions and were available at junior colleges including Miami-Dade Junior College, which is only a few minutes' drive from FIU. Since FIU is an upper division university, all of these duplicate courses are numbered 300 or 400 instead of 100 or 200, as they are at the four-year universities. A total of 118 courses were discovered in the 1974-75 catalog which were listed in the catalog of the University of Florida (UF) at the 100 or 200 level. Most of these courses are also offered at FTU at the 100 or 200 level. The University of Florida was used for comparison purposes because FIU has some programs not offered at FTU. Most of the courses identified at FIU included in their description beginning, introduction, basic, principles, elementary, or survey. In many of the cases there were no lower division courses shown on the degree requirements in the FIU catalog. In some cases courses were listed as required at the lower division but it was explained that they could be taken at FIU if the student was willing to stay at FIU longer than two years.[13]

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[12] Florida, 1974-75 Allocation of the Education and General Lump Sum Appropriation, Tables 8, 9, and 16.

As a result, except for the requirement for a certain number of basic hours, a student can obtain the prerequisite lower level course requirements for his major at FIU even though some are considered lower division courses at other four-year universities. They are also offered at Miami-Dade Junior College only a few miles away. The allocation model of the SUS provides more faculty members per student in upper division courses than lower division courses (an average for all disciplines of 19.38 versus 26.40 students per faculty member).[14] FIU is being budgeted for courses at the upper level rate when these courses are by content lower level courses. The courses involved cover most of the basic discipline categories including accounting, biology, computer and information sciences, physical sciences, letters, fine and applied arts, mathematics, philosophy, social sciences, psychology, foreign languages, and communications. The individual courses are listed in the FIU catalog immediately after the undergraduate program requirement listings in the last footnote reference.

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[13] Florida, Catalog, Florida International University, pp. 45, 50, 53, 58, 61, 66, 74, 96, 103, 117, 128, 141, 152, 163, 168, 178, 184, 186, 338.

[14] Florida, 1974-75 Allocation of the Education and General Lump Sum Appropriation, Table 13.

To further investigate the extent of this problem a computer analysis was made of the total number of different courses offered in certain discipline categories in the fall quarter, 1974. The upper level was used to make a comparison of the possible impact of lower level courses being offered at the upper level at the upper level only universities.

In business and management at the upper level, Florida offered fifty-nine different courses and Florida International offered eighty-two different courses. Florida Technological with approximately the same enrollment as Florida International offered forty-eight different business and management courses at the upper level.

In fine and applied arts Florida offered fifty-five different courses at the upper level and Florida International sixty-five different courses. Florida Technological offered only thirty-six different courses in fine and applied arts.

In psychology Florida offered twenty-two different courses at the upper level and Florida International seventy-five different courses. Florida Technological offered twenty-one different courses at the upper level.

The fact that FIU was used as an example in the above discussion is not a criticism of the administration there. A similar situation exists at the other upper level universities, but not to the same extent since they have smaller enrollments. The four-year universities are not free of inconsistencies either. The University of North Florida is an exception. Although there are a few courses duplicating lower level requirements, in most cases the catalog states "These courses will not be offered at the University of North Florida and must be taken at the community college."[15] The University of Florida offers no lower level courses in statistics and computer and information sciences, for example, while Florida Technological University has several lower level courses in those disciplines with almost identical descriptions to 300 level courses in those disciplines in the UF catalog.

## Discipline Classification Discrepancies

During the analysis of the course descriptions at the various universities to confirm the situation discussed immediately above, it appeared that there might be some general discrepancies in the classification of courses by discipline category. As an example, the University of Florida, University of South Florida, and Florida Technological University offer courses in technology and yet there are no allocations for this discipline category in the budget nor are there any faculty members shown on academic assignment computer tapes for that discipline category (see Tables 7 and 8). Several other similar apparent discrepancies were noted including interdisciplinary studies, where no budget allocations were made but significant numbers of faculty members were actually used (see Table 7). A sampling of actual course numbers was taken from the various catalogs and checked with the computer data on student enrollment for academic year 1974-75 to discover if there were other significant classification discrepancies. In addition to the two disciplines mentioned above, courses in social sciences, physical sciences, computer and information systems, mathematics, home economics, library science, health professions, and communications were included in the sample. It also included those courses and disciplines where there were differences in administrative arrangements from university to university within the SUS. For instance, economics is part of the College of Social Sciences at Florida State University rather than the College of Business as it is at most of the other universities. According to the discipline classification system used by the SUS, economics is classified as part of the social sciences discipline. The discipline category classifications used were developed by the National Center for Higher Education Management

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[15] Florida, Catalog, University of North Florida, 1974-1975 (Jacksonville, Florida: n.p., 1974), p. 121.

Systems, Western Interstate Commission for Higher Education.[16]

The sampling accomplished was done only in cases where it was apparent from the data that there were obvious opportunities to make classification errors. There are very likely other discipline category classification problems which were not obvious enough to be included in the sample. Each general subject area will be covered separately.

Economics was one of the areas sampled since the economics department is administratively assigned to business and management at five of the nine universities and to arts or social sciences at the other four universities. The descriptive category structure used by the SUS classifies economics in social sciences. In the computerized instructional activity file for academic year 1974-75, Florida Technological, South Florida, and North Florida classified economics courses in the business and management discipline.

Communications was also sampled. According to the SUS model, communications consists of courses in communications general, journalism, radio/TV, advertising, and communication media. North Florida, Florida Atlantic, Florida A & M, and Florida International University classify these courses under letters. The other five universities classify these courses under communications.

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[16] Warren W. Gulko, Program Classification Structure (Boulder, Colorado: National Center for Higher Education Management, Western Interstate Commission for Higher Education, 1972), pp. 85-91.

Computer and information sciences was sampled. This discipline includes computer and information sciences, information sciences, data processing, computer programming, and systems analysis. Florida State, Florida International, and North Florida classify these courses in the mathematics discipline, Florida A & M under letters. The other five universities classify these courses properly under computer and information systems.

Public affairs and service was the last discipline sampled. This classification includes community services, public administration, parks and recreation management, social work and helping services (other than clinical social work), law enforcement and corrections, and international public service. There was a variety of evidence to evaluate here. There is obviously some overlap between this discipline and political science which the model includes in social sciences. Florida A & M, North Florida, and South Florida reported no courses classified as public affairs and service yet all three catalogs listed courses such as public administration under the political science category with the social sciences college. The other six universities did classify some courses as public affairs and service.

The conclusion reached from the sampling done was that the administrative arrangements had an influence on the way particular courses were classified by discipline category. These classification discrepancies reduce the validity of the productivities computed for the disciplines involved if you agree that the courses offered in different disciplines require different student-faculty ratios for instruction.

# CHAPTER VI

# CONCLUSIONS AND RECOMMENDATIONS

## General Observations

The subject of political influence on decisions concerning postsecondary education resource allocation in Florida has not been mentioned to this point. By no means does this indicate that political implications do not have a significant influence on the institutional arrangements and ultimate allocation of resources. The exact impact is difficult to quantify because of the absence of evidential material which can be specifically identified with a political source.

Universities and junior or community colleges have a geographical location in a political subdivision with the resultant constituency and elected representatives. They also have staff, students, alumni, and the families associated with them. The mature universities in Florida, although strongly political through their law, medical, and agricultural school graduates, plus the athletic teams have struggled to maintain a fair allocation of the resources which they have been required to share to some extent with the six new universities established since 1960.

The decision to establish six new and separate universities in Florida with the same general objectives of program standards could be questioned on economic or educational grounds. There were other alternatives available. Lack of evidence makes it impractical to prove that the rising political influence in the metropolitan areas ruled out serious consideration of the other alternatives. It is not likely that the decision on equal standards for comparable programs will be revised. The conclusion is that a politically palatable compromise on the allocation of resources will be sought from year to year.

The above comment on political influence is to point out that it has not gone unnoticed. It has been given no specific weight in the conclusions and recommendations because of the inability to adequately measure its direction and strength.

The objectives of effective allocation and efficient utilization of scarce resources is a fundamental part of economic theory and philosophy. Higher education is facing an increasing crisis which it has been able to successfully avoid for the most part in the past. The Carnegie and Ford Foundation studies and other basic research on this subject cited in Chapters II and III suggest that there are limits to the subsidies that legislators, taxpayers, and private contributors are willing to provide. There must be more efficient utilization of the resources allocated and at the same time an improvement in the capability of explaining in more detail what resources are required and the specific reasons for the requirement.

The knowledge should be available within higher education to work out an economic solution. Perhaps the first step is to adopt an objective of improved utilization of instructional resources and then design a responsibility accounting or information system which will provide administrators with self motivation which will be congruent with the overall system goals.[1]

It would seem more rational for academicians to actively pursue economic solutions themselves rather than having the hard decisions of financing forced on them in detail by outsiders, with less knowledge of their educational impact.[2] Administrators of higher education will need to improve their ability to explain resource requirements to the Legislature and the public by using logic and reason, rather than simply threatening to cut back enrollments or seriously reduce the quality of the education offered, if requested funds are not provided.[3]

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[1] Robert Anthony, Management Accounting (3rd ed.: Homewood, Illinois: Richard D. Irwin, 1964), p. 352; Robert Anthony, "Cost Concepts for Control," Accounting Review, 32 (April 1957), 234; Edwin H. Caplin, "Behavioral Assumptions of Management Accounting," Accounting Review, 41 (July 1966), 496-509.

[2] Trow, pp. 107-109; Lawrence, pp. 147-148.

## General Philosophy on Conclusions and Recommendations

The discussion of the political influences on decisions in higher education resource allocations in Florida was one indication of the limitations on the conclusions and recommendations of this study. Certain assumptions will be made.

1. The institutional arrangements presently existing will continue to exist for the foreseeable future. There will be nine state universities. Five of those universities will include freshman and sophomores. Four universities will begin with students who have come from junior or community colleges or have transferred from other universities.
2. The current policy of equal resources for comparable programs will continue. This means that no university will be given additional resources specifically to differentiate it from the other universities in any particular program.
3. The current policy of allowing university administrators maximum flexibility on the use of instructional

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[3] St. Petersburg Times (May 11, 1975), p. 13B; Pensacola Journal (January 10, 1976), p. 2B.

resources assigned, within programs approved by the Board of Regents, will continue. This does not mean that this is the best policy necessarily. It only recognizes that the existing situation is likely to continue.

4. The State University System office will act as overall administrative headquarters for carrying out Board of Regents policy.

5. The Legislature will determine the total amount of resources to be allocated, and may take more and more direct control over specific policy matters.

## The Problem of Complexity in the Current Allocation Model

The previous chapters have discussed in detail the allocation model used during the 1974-75 budget year. It is a complex model consisting of several individual components which may cause administrators and faculty members to be motivated to take action in certain directions in their daily activities, in response.

One of those components is discipline categories. The model assumes that each university is so completely individual that the allocation of instructional resources must recognize the differences in existing discipline categories. The general assumption behind this use of discipline categories is that different disciplines require different environmental conditions for instruction and therefore different numbers of faculty per student or student credit hour. Once this assumption is made it is necessary to use a predicted enrollment base by discipline category and divide it by a discipline category productivity factor which is supposedly based on the immediate past year's experience in faculty members per student in that discipline category, at each level of instruction.

The other major parameter in the present complex model is level of instruction. The assumption is made that the environmental conditions for instruction as to the ratio of faculty per student or student credit hour varies in direct proportion to the level of instruction of the course. There was some confusion evidenced at the advanced graduate level as to whether it is the level of the course which is critical to the difference in environment or the level of the students in the course. Looking at this situation logically results in a generalization that as the level of the course material increases more theoretical or abstract ideas must be covered. Coverage of these more theoretical or abstract ideas requires more direct interpersonal communication between the teacher and the student as well as between student and student. The learning takes place at the higher levels on more detailed discussion of the strength and weaknesses of these theoretical and abstract concepts rather than from demonstration by the teacher as to how they are applied.

While the above discussion is partially based on personal observation, it is meant to be a statement in summary of the rationale included in the rather general assumption made in higher education practice and in the literature on the subject, that the student-teacher ratio should be lower as the level of instruction increases.[4]

The logic of this argument seems to be the strongest at the graduate level versus the undergraduate level. The individuals who continue on to these levels are usually selected by the application of criteria based on previously demonstrated academic performance and testing. At one time it could have been said that this also applied to those admitted to colleges and universities at the undergraduate level. While there may be some isolated situations, mostly related to where the high school graduate begins his higher education, for the most part, at least in Florida, every high school diploma holder can enter higher education if he or she so desires.

The preliminary discussion of this subject at this point will be considered within the framework of the assumptions made above. It has already been decided that in Florida the level of instruction makes a decided difference in the environmental conditions required for instruction. The State of Florida has established twenty-eight public junior or community colleges whose instruction is limited to the lower undergraduate level. Tuition rates and workload of faculty is different in those institutions than it is at the nine state universities. Additionally there is the distinction between the five state universities with lower level programs and the four designed with the original objective of beginning with courses at the upper undergraduate level. There will be different tuition rates per credit hour charged to a student enrolling in a lower level course than if an upper level course is enrolled in.

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[4] Carnegie Commission on Higher Education, The More Effective Use of Resources, pp. 1-26.

Therefore, it can be concluded that a resource requirement difference is recognized by level of instruction.

## Recommendation on the Elimination of Discipline Category from the Budget Allocation Model

The State University System of Florida should discontinue the use of discipline categories as one of the variables for allocating instructional resources to the nine state universities.

The evidence in this study indicates that budgeted allocation by discipline category varies significantly from the actual utilization by discipline category. There are also wide variances in productivities in actual use by discipline category from university to university. Thirdly the definition and classification by discipline category is obviously not standardized. There are variations in deciding what subject matter should be included in a particular discipline category from university to university. One only has to look at university catalogs to determine that the requirements for a degree as a major in a discipline vary widely. Why then assume that everyone means the same thing by the term business and management or communications, or even letters? The classification problems outlined in Chapter V indicate that there are significant differences of opinion on this subject.

Even if educators could agree on standardized definitions for discipline classifications, the wide variance in productivities within the reported discipline categories in the 1974-75 academic year indicates that there are some critical intrainstitutional factors involved in the decisions on utilizing resources which will not be solved by the use of the current system.

The discussion in Chapter III of the subject of discipline category as a major component of the allocation model pointed to the lack of empirical evidence to support different class sizes by discipline taught. Secondary education certainly does not consider different class sizes based on the subject matter being taught.

Then why is discipline category a major component of the allocation model in the State University System in Florida? The two assumptions that must support this use are

1. There are significant differences in the optimal instructional environment, on the average, between disciplines, which require different average class sizes, and
2. The discipline categories that students will enroll in at specific universities can be predicted in advance with relative accuracy.

The first assumption is not supported by the data in Tables 14, 15, and 16 in Chapter V. These tables indicate the wide variances from the highest to the lowest productivities in all disciplines at all levels of instruction. Tables 17 and 18 in Chapter V show even stronger evidence by indicating not only the range of variability but the individual variability from university to university. Table 18 is particularly significant since the upper level is assigned a majority of the FTE faculty in instruction (Table 7, Chapter IV). Table 18 indicates that education, which may be one of the easier disciplines to define and classify, has a significantly varying pattern of productivity at each of the nine individual universities.

The second assumption concerning the ability to predict student enrollment by discipline category for individual universities is not supported by the evidence in this study. Chapter V discusses several examples of the differences between budgeted and actual student credit hours by discipline category at individual universities. Table 13 in Chapter V indicates the differences within the State University System as a whole between budgeted and actual student credit hours by discipline category.

What explanation is there for the wide variations in productivity factors by discipline category from university to university? Why is the first assumption above not demonstrated by the experience within the State University System of Florida in academic year 1974-75? The wide variety in productivity within a particular discipline from university to university must be explainable by a combination of factors: the number of students expected, the number of students actually enrolled, the number of faculty members available in the discipline; the perception of administrators as to the importance of the discipline to the overall university's programs; the perception of the faculty as to the different number of courses required to be offered in that discipline; and differences in perception as to what the optimum relationship of students or student credit hours per faculty member should be for different courses at different levels.

These factors are combined in different relationships at each university because of the differences in conditions, policies, philosophies, and motivations of the individual administrative decision makers there. The individual universities obviously do not consider the system-wide productivity factors as a requirement in determining the actual utilization of faculty members. Tables 7, 8, and 9 in Chapter IV and Tables 14 through 18 in Chapter V demonstrate that the system's wide productivity factors by level of instruction are only weighted averages of the immediate previous year's experience.

The behavioral impact of the use of these systems-wide weighted averages by discipline category is exactly opposite to the traditional effect expected of a budgetary process, which is to stimulate individual managers to work toward overall goal congruence. There is no direct motivation for administrators to reduce emphasis on disciplines with steadily declining enrollments (and therefore lower productivities) to take corrective action. Administrators understand that the budget system will provide more instructional allocations per student credit hour in those declining enrollment (and productivity) disciplines and less in those whose productivities are increasing due to increased student enrollment. As pointed out in Chapter III, the knowledge that this was the system to be used could stimulate behavior opposite to that contained in the objectives of this study in Chapter I, of effectiveness and efficiency in the utilization of resources.

Complete elimination of the discipline category component from the allocation model for instructional resources is necessary if effective distribution of those resources is to be attained. Positive behavioral impact is more likely to occur since administrators will know that they will not be rewarded for continuing low productivity programs. This should stimulate administrators to review those programs more objectively in an attempt to determine more exactly what is causing the low productivity. Future planning at the university level should be improved since administrators would know that the only factors being used to allocate instructional resources would be system-wide productivity by level of instruction.

## Recommendation on the Use of Levels of Instruction in the Budget Allocation Model

The institutional arrangements in postsecondary education in Florida are so highly influenced by level of instruction it is not feasible to eliminate its use in the allocation of instructional resources. In addition, there is strong support in the literature as well as in the current practice in higher education to indicate that required environmental conditions do vary (class sizes) as a function of the level of instruction.

Once it is decided that productivities by level of instruction should be the major component of the allocation model, it is then necessary to face the problem of determining the numerical factors from year to year. This study will not attempt to determine those numbers. This is a decision that must be made at the State University System office on an annual basis from the facts available at the time.

The past year's enrollment by level and utilization of instructors by level would be one consideration. Board of Regent policies, current as well as future, would have to be considered. Legislative action of course would be the final and most important consideration in determining the specific numerical factors actually used each year.

The other component of the allocation model, the student enrollment projection to be used, must also be determined each year. The current productivity using the immediate past year's enrollment by level of instruction alone (not considering discipline category) has considerable merit. It removes the requirement for projections. Assuming the information system providing the enrollment data will continue to improve as more experience is gained, it is recommended that immediate past year's enrollment be used as a base. There should be some modifications to this base for known changes from the immediate past year's experience. Some universities may be eliminating entire programs or portions of programs. Other universities may have approval to begin adding new programs to various levels. This adjustment process could be handled exactly as the special adjustments and reserves are currently operating as described in Chapter III. Table 3 in Chapter III has a column totaling 301 academic positions that were allocated in this manner in 1974-75.

The subject of the advanced graduate level of instruction should be mentioned here even though it is no longer in use. It did cause difficulties in handling the data during the study since the academic assignment file listed FTE faculty assigned to advanced graduate courses but those courses were not identified separately in the instructional activity file. In Chapter V each time the graduate level was included a full explanation was given as to how the information was adjusted. This difficulty has had no direct impact on the conclusions and recommendations of the study. Elimination of the advanced graduate level as an allocation component will actually further simply the model and should assist in improving effective allocation of instructional resources to the nine state universities.

## Course Level Classification

Chapter V discussed in detail the problems associated with variances in the level of classification of a particular course from university to university. As the study progressed the importance of this problem to the final results in allocating instructional resources became more obvious.

Regardless of the recommendation on elimination of discipline categories as a major component of the allocation model, immediate resolution of the course level classification problem is required. The discussion of the extent of this problem outlined in Chapter V is evidence that this is a very important problem that must be resolved.

There should be immediate improvement in the standardization of course levels. The common course numbering project should be completed and should include specifically the problem at the upper level universities. There is no justification for charging a student at an upper level university higher tuition for the same course offered at the lower level elsewhere and then providing a larger number of resources per student credit hour because the course if improperly classified as to level.

As pointed out in Chapter V, this problem is not limited to the upper level universities. The five universities with lower level programs also have courses numbered 300 and above that are apparently the same as courses numbered 100 to 299 at other universities.

Resolution of this problem of classifying courses by level is not a simple task. Large numbers of Florida educators have been working on it since 1971.[5] It requires resolution as soon as possible if the objective of effective allocation of instructional resources is to be attained.

The manual which is cited provides the machinery for solving this problem within a highly organized framework. Even given the fact that educators are by nature argumentative about their areas of expertise some progress has been made on the project.

If it is determined that agreement cannot be reached as to what courses in postsecondary education throughout the State of Florida are lower level and which are upper level, an alternative recommendation is necessary. If the lower level courses cannot be standardized, instructional resource allocations in the State University System of Florida should be made based on average productivities by undergraduate and graduate levels only.

Whichever alternative is selected, it will be necessary to adjust the average productivities by level to equate with the total number of faculty resources authorized by the Legislature, as the present system does with productivity factors by level and discipline category.

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[5] Florida, Discipline Task Force Manual, p. B-1-3.

## Final Comments

One of the best commentaries on the evidence against the current complex model for allocating instructional resources within the State University System of Florida is Table 11 in Chapter IV. Notice that every university except Florida Atlantic was able to operate instruction programs with materially less resources (proportionately) than those budgeted by the complex model. Notice also that academic administration absorbed more resources than budgeted at every university. Does this give the indication that the complex budget structure causes more administration effort in finding ways to make the most out of the budget allocation system? Or is it that the complexity of the system increases the proliferation of administrative levels?

Achievement of the objective stated in Chapter I of more effective and efficient utilization of instructional resources in the State University System of Florida begins with the method of allocation selected to distribute resources to the universities. How the individual administrators at the universities respond to that method of allocation should be an important consideration in the design of the allocation model.

Simplifying the present budget allocation model by using only normative productivity by level of instruction could cause the administrators at each university to examine the current program offerings, on a course by course, level by level basis, to insure that each program contributes its proportionate share to the success of the university's overall mission.

Eliminating the complexity of discipline categories reduces the possibility of perpetuating previous inequities that were caused by changing patterns of enrollment, or resulted from choices made on the basis of value judgments by departmental or other university administrators. The environmental conditions selected for particular courses and the number of different courses offered will be more likely to be decided on the modes of instruction most beneficial for the situation at hand, and the impact of the decision on overall university and system goals.

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Edwin Arthur Wood was born in Atlanta, Georgia, on June 25, 1922. He graduated cum laude from Ohio State University in 1955 with a Bachelor of Science in business. In 1965, he graduated from George Washington University with a Master of Science in financial management. He entered the Graduate School of the University of Florida in 1968, completing the course requirements and preliminary examinations in 1970. He was appointed Assistant Professor of Accountancy at Florida Technological University in 1971 and continued working on the dissertation. He became a registered Certified Public Accountant in Florida in 1971.

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.

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